

The NEBB Professional

2023 - Quarter 1

Cover Story

Decarbonization Goals and Challenges

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


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President's Message



Just a few months ago, Jon and Candi Sheppard hosted a fantastic NEBB Annual Conference in Charleston, SC. The energy was incredible and my hope is that we can harness that energy now as we launch further into 2023.

This year, I am really looking forward to hosting a few events in the Greater Pacific Northwest and wrapping things up in Monterey, CA at the 2023 NEBB Annual Conference. Our focus in Monterey will be the quality and content of our speakers, local chapter collaboration, and a whole lot of fun.

Coming soon, in May 2023, we will host the grand opening of the new Robert B. Gawne Training and Education Center located at NEBB's main office in Gaithersburg, MD. So many people have contributed to the buildout of this center, and we want to thank every one of you.

As 2023 kicks off, I see so much on the horizon that I do want to focus my time, too. Starting with chapter coordination, NEBB needs every level to function and communicate well. Technicians must communicate with their companies. Companies need to communicate with their chapters. And our chapters need to communicate with NEBB's headquarters. Full circle communication is what it's going to take as we continue this journey to a next-level NEBB.

If you attended the annual conference in November, you witnessed the level of excitement everyone shared to be back together, face-to-face, planning our futures. We plan to continue this momentum with our mid-year committee planning session for our many NEBB volunteers in June. Virtually, we expect to see even more opportunities for collaboration in the form of committee events similar to the successful YPN Happy Hour that took place last year. As the interest in virtual reality and augmented reality methods of providing training and practical exam proctoring continue to grow, we need to begin positioning ourselves to lead our industry. As an international certifying association there is no excuse for NEBB not to lead. Let's not just think outside the box, let's nuke the box!

It's all about challenging ourselves. And if I have learned anything so far as NEBB President, it is that we are up for that challenge.

Phil Emory

NEBB President



Mensaje del presidente

Hace solo unos meses atrás, Jon y Candi Sheppard organizaron una fantástica Conferencia Anual de NEBB en Charleston, SC. La energía fue increíble y mi esperanza es que podamos aprovechar esa energía ahora en la medida que nos adentramos en el 2023.

Este año, estoy a la expectativa de la organización de unos cuantos eventos en la región del Noroeste del Pacífico y cerrar las actividades en Monterrey, CA en la conferencia Anual de NEBB 2023. Nuestro enfoque en Monterrey va a ser la calidad y el contenido de nuestros presentadores, la colaboración entre los Capítulos locales, y mucha diversión.

Próximamente, en mayo de 2023, se llevará a cabo la gran ceremonia de apertura del nuevo Centro de Educación y Entrenamiento Robert B. Gawne localizado en las oficinas principales de NEBB en Gaithersburg, MD. Muchas personas han contribuido a la construcción de este centro, y queremos agradecerse a cada uno de ustedes.

Conforme inicia el 2023, veo tantas cosas en el horizonte que también debo enfocar mi tiempo. Empezando con la coordinación de los Capítulos, NEBB necesita que cada nivel funcione y se comunique bien. Los técnicos deben comunicarse con sus compañías. Las compañías necesitan comunicarse con sus Capítulos. Y nuestros Capítulos necesitan comunicarse con las oficinas centrales de NEBB. Una comunicación circular completa será el elemento clave mientras continuamos nuestro viaje hacia un NEBB del siguiente nivel.

Si usted asistió a la conferencia anual en noviembre, fue testigo del nivel de emoción que todos los participantes compartimos por volver a estar juntos, cara a cara, planeando nuestros futuros. Planeamos continuar con este impulso con nuestra sesión de planeación de los comités de medio año para nuestros múltiples voluntarios de NEBB en junio. Virtualmente, esperamos ver más oportunidades de colaboración a través de eventos de los comités similares a la exitosa "Hora Feliz" de la YPN que se llevó a cabo el año pasado. En la medida que el interés en los métodos de realidad virtual y realidad aumentada para proveer entrenamientos y exámenes prácticos continúa creciendo, necesitamos empezar a posicionarnos para liderar nuestra industria. Como una asociación de certificación internacional, no hay excusa para que NEBB no sea el líder. ¡No solo pensemos fuera de la caja, sino que exploremos la caja!

Todo es acerca de retornos a nosotros mismos. Y si he aprendido algo hasta ahora como Presidente de NEBB, es que estamos listos para ese reto.

Phil Emory

Presidente de NEBB



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Letter from the Editor



It's a new year and that means new opportunities for both firms and individuals, as well as the industry as a whole. As in years past, we will continue to see a deeper dive into sustainability throughout 2023 and beyond. It's no secret that many of the most successful organizations have been those leading the green charge, and we can only expect that to grow now considering the variety of regulations and incentives taking effect. Take a look at our feature article, "Decarbonization Goals and Challenges" by Meaghan Trentacost on page 10 to see how sustainable practices like net-zero building design are being applied to maximize energy efficiency and shape the future of the industry.

Those that have been certified or involved with NEBB for some time already realize the many benefits of adhering to strict procedural standards and requirements. But for anyone that has yet to experience the impact of NEBB on a project outcome, the path to certification can be an elusive one. Check out Tim Thorpe's moving story on page 21 to see firsthand just how life changing NEBB certification can be for a firm. Get the perspective behind individual involvement from NEBB President-Elect Luis Chinchilla's interview on page 18.

If you missed the 2022 NEBB Annual Conference, be sure to check out the recap on page 14 from 2022 Past President Jon Sheppard. For more chances to interact with your NEBB peers at exciting events throughout 2023, keep an eye on the NEBB calendar located at www.nebb.org/events/ and follow along on social media.

Kerri Souilliard, Editor

Share Your Ideas!



The NEBB Professional is a hub of peer tips and expertise, case studies and experiences, upcoming industry trends, and more. Share your story ideas today, so we can help you turn it into an article tomorrow.

Contact editor@nebb.org





Executive Vice President's Message

Greetings, and happy new year! Throughout 2022 and into 2023, our NEBB committees and staff remain very active. As a result, I have initiatives and updates to report on, but first, allow me to share a quote by Vince Lombardi that I believe sums up NEBB's 2022 year in action:

Individual commitment to a group effort - that is what makes a team work, a company work, a society work, a civilization work.

With that, I'd like to thank everyone who has joined in on that commitment to advancing NEBB forward in 2022. Specifically, our many volunteers, subject matter experts, leadership, and staff. Our association would not be what it is today without your dedication and tireless work, and we appreciate each and every one of you! You are the foundation of these successes:

Throughout 2022, NEBB made sure that we were present in the industry. NEBB staff and volunteers attended the AHR, ASHE, IFMA, and i2SL trade shows with the support of local chapters. The Tennessee NEBB chapter supported the NEBB booth for the second year in a row, representing NEBB at the ASHE booth. I want

to thank William Bailey and Chris Palmer for jumping in and representing NEBB, along with the staff, during this trade show last year. Moving into 2023, NEBB will be attending AHR in February 2023, as well as ASHE, IFMA, and i2SL, later in the year.

This year, we will strive to have NEBB speakers at various industry events to help shine a light on NEBB and open doors for additional partnerships. With that, I would like to thank NEBB 2018 Past President Don Hill for the wonderful presentation on construction management and commissioning agent collaboration that he gave at the 2022 i2SL trade show in the fall. It was a wonderful presentation and was highlighted on NEBB's social media handles.

NEBB continued to bolster industry relations with ASHRAE through our membership in standing committees, and we thank all of you who have helped bridge the gap across associations. In 2023, we hope to get others involved within their local chapters so we can continue to raise our partnership nationally.

The NEBB Learning Center, or the NLC, was launched online in early 2022 and is a great source for all to get continuing education credits. NEBB has a variety of courses for all disciplines online now, and our commit-

tees will continue to create and build out new courses and lessons to be uploaded. Additionally, NEBB recently became an AIA Continuing Education Provider at the end of 2022. Moving forward, what that means for you is future opportunities for courses that meet both NEBB and AIA continuing education requirements. We know you are all busy, and the ability to kill two birds with one stone is huge. If you have not already done so, please be sure to check out the NLC and our growing options to get continuing education credits!

NEBB continues to grow within the industry but also through our increasing numbers. Over the last two years, we have added 37 new firms, with seven currently in process as I write this. Our candidacy numbers continue to grow as well, with over 700 individuals somewhere within their candidacy journey to achieving NEBB certification. The NEBB staff answers inquiries and processes certification applications daily, so our numbers are only expected to continue to rise.

In 2022, the Robert Gawne Training and Education Center was utilized for two hands-on segments of the Building Enclosure Testing Seminar. This was the first discipline to have its practical section completed in the construction process, and it was a great success! We are now moving into the project's final phase and are shooting for a spring 2023 grand opening. Moving forward, we are excited to be able to offer hands-on training in all NEBB-applicable disciplines!

After listening to feedback and researching solutions, NEBB moved to an annual certification cycle for firms and individuals, put into effect on July 1, 2022. This change allows individuals and firms to recertify and pay annual fees in one swift action through the online NEBB portal, streamlining the process and overall user experience. With December 31 now behind us, I am pleased to report that the feedback has been positive. Moving into the next cycle, we will continue recommending and making improvements, keeping in mind lessons learned to make recertification seamless for you.

In addition, addendums were added to each NEBB standard, effective July 1, 2022, with a new requirement for all NEBB Final Reports in all NEBB disciplines to contain a summary list of instrumentation and

equipment used on the project or that will be used to verify reported data to be accompanied by copies of the current calibration certification. This new requirement allowed us to move towards an instrument verification program, alleviating the time and stress of the firm recertification submittal process without sacrificing the requirement and integrity of the certification.

To add to NEBB's ANSI-approved library, the NEBB CPT Standard and Compounding Pharmacy Standards Committee continues to work on the two draft documents as we move into 2023. With any large SME-driven project, we are always looking for more support. If you are interested in joining these committees and have a background in cleanroom performance and/or cleanroom compounding pharmacies, please let me know!

Growth is never by mere chance. It is the result of forces working together.

Growth is never by mere chance. It is the result of forces working together. The NEBB staff team works consistently behind the scenes, making processes easier for the entire association, taking into mind lessons learned, and upholding compliance. They ensure the NEBB brand maintains a high reputation in the industry and continue to work with spec writers across the country to ensure that NEBB is written into specs, creating more opportunities for NEBB firms.

Teamwork is the ability to work together toward a common vision. The ability to direct individual accomplishments towards organizational objectives. It is the fuel that allows individuals to attain uncommon results. With that, I'd like to take a moment to recognize the NEBB staff and thank them for their hard work and continued dedication:

Jeff Schools, Technical Director
Christina Spence, Executive Coordinator
Samantha Hawa, Online Content Coordinator
Cristi Arbuckle, Exam Development Coordinator
Sumayyah Milstein, Firm Coordinator
Sheila Simms, Individual Certification Coordinator
Keiry Salgado, Scheduling and Candidacy Coordinator



Tiffany Meyers and Christina Spence in Charleston, SC

After many months of planning, NEBB hosted its 52nd Annual Conference in Charleston, South Carolina, in November 2022, with great success. The week started off with a TAB Technician 2-day seminar, which was sold out. On Wednesday, we hosted the closed technical committee meetings, which allowed the committees the opportunity to meet and collaborate on NEBB projects. The annual golf tournament and fishing excursion were held on Thursday morning. We marked the start of the conference with the opening session Thursday evening, followed by the Get Acquainted Party at the Charleston Aquarium. Friday kicked off with the annual Town Hall session, rolling into two full days of educational track sessions. Making sure all NEBB disciplines were covered with the educational content was primary in building the educational portion of the conference schedule, allowing attendees the best opportunities to get their continuing education credits. The Vendor Reception was held on Saturday afternoon, followed by the closing session, which included NEBB's donation to ASHRAE Research and the passing of the gavel from 2022 President Jon Sheppard to 2023 President Phil Emory.

This conference marked my 13th NEBB Conference. True to form, it was a week full of meetings and educational sessions, but in a world where face-to-face

meetings have been limited, it was also a much-needed chance to catch up with old friends as well as an opportunity to make new ones. We look forward to the 2023 Annual Conference in Monterey on October 26-28, 2023. Please save the date, and plan to join us for another amazing conference!

Following the closing of the annual conference, the Board of Directors met that Sunday, November 6th, and elected the 2023 Board. I want to welcome the newest Directors nominated to the Board in November 2022 for the 2023 term: Cody Lee and Mike Peak. I'd also like to welcome Rodney Hinton to the NEBB Executive Finance Committee (EFC), now serving in the Treasurer position for 2023.

With these new gains comes the departure of NEBB Past President Amber Kelly and Allen King from the NEBB Board. Longtime advocates of NEBB, these two individuals proved great dedication and servitude through their many contributions to NEBB over the years. On behalf of NEBB, I extend a sincere thank you to them both for their service.

Please allow me to introduce your 2023 NEBB Board of Directors:

President, Phil Emory
President-Elect, Luis Chinchilla
Vice President, Mike Kelly
Treasurer, Rodney Hinton
Immediate Past President, Jon Sheppard
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Ron Landberg
Brian Hill
Brian Keller
Donald Pittser
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Cody Lee
Mike Peak

American author and leadership expert Ken Blanchard once said, "Servant-leadership is all about making the goals clear and then rolling your sleeves up and doing whatever it takes to help people win. In that situation, they don't work for you; you work for them." And I can't think of a better way to describe our selfless, dedicated staff and volunteers at NEBB.



In closing, my staff and I are looking forward to a successful 2023! If you would like to become more involved with NEBB, please feel free to contact me at tiffany@nebb.org. Volunteering is an excellent way to build on your current professional relationships and an opportunity to make more!

To keep up to date with NEBB and any updates, please make sure you follow us on our social media handles!! Remember to like and share us, too!

Here is to a safe, healthy, and successful 2023!

Tiffany Meyers ●



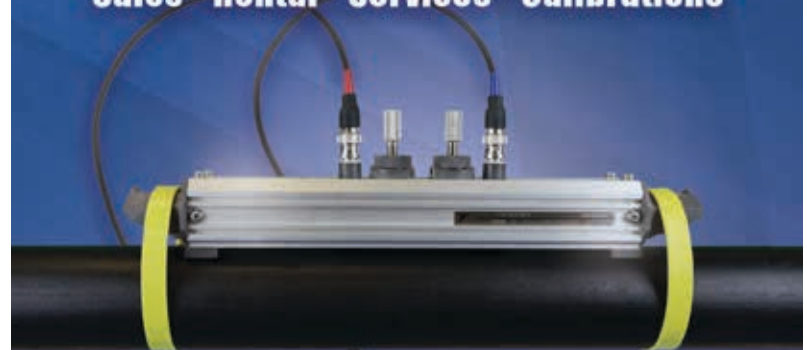
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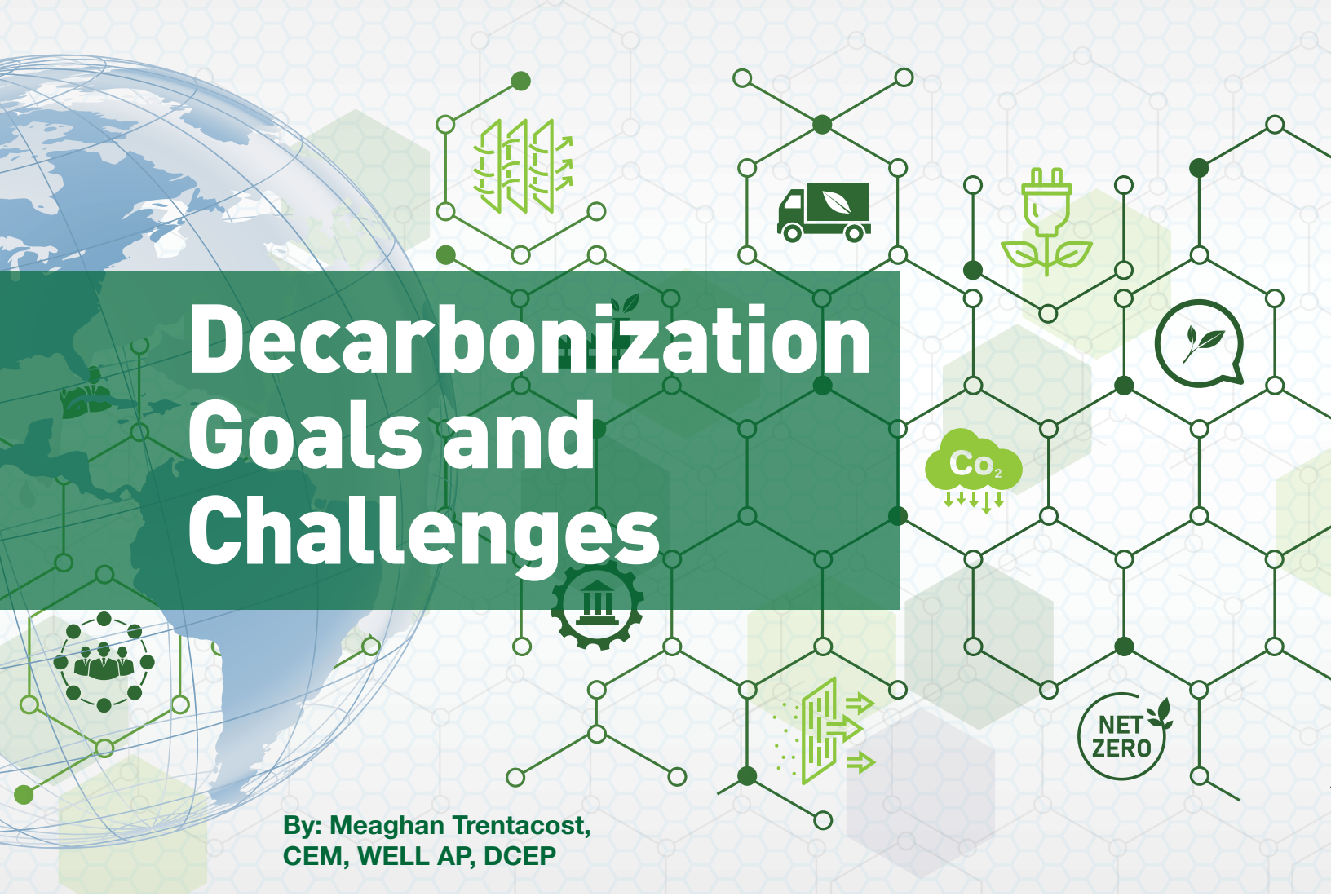
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Decarbonization Goals and Challenges

**By: Meaghan Trentacost,
CEM, WELL AP, DCEP**

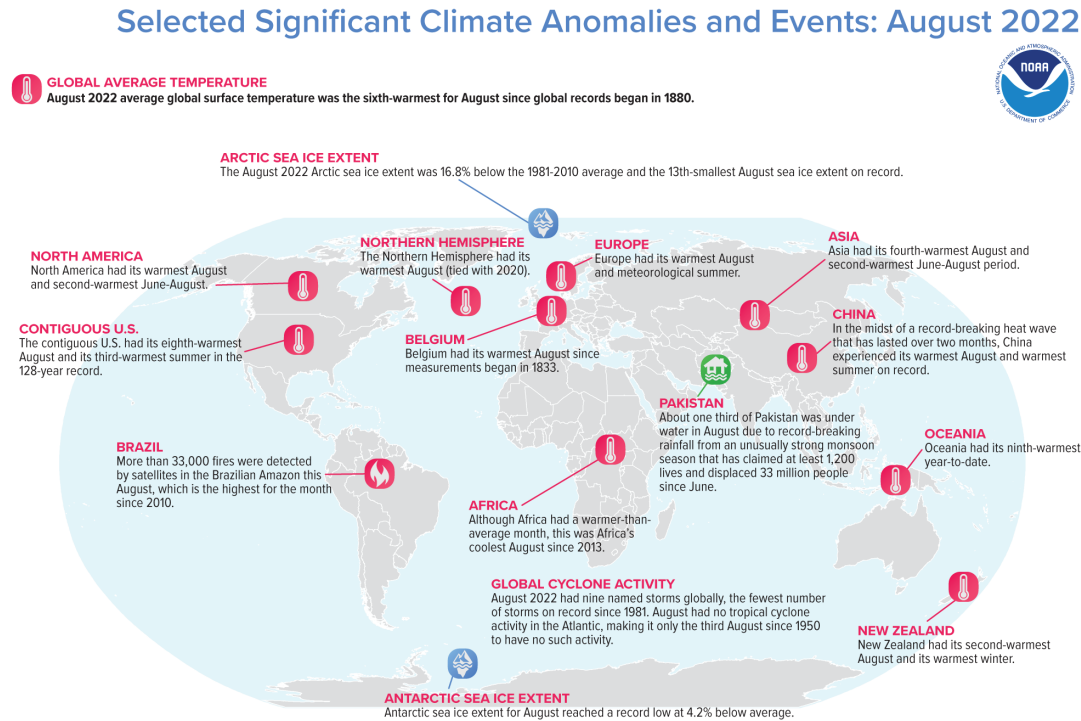
Based on the IPCC Special Report on Global Warming, over 100 countries have proposed or are considering a net zero target. This decision to create carbon goals and reduce carbon emissions is significantly influenced by catastrophic natural disasters such as flooding in India, wildfires in California, and widespread water shortages, to name a few (Figure 1). Within one month, there were fourteen occurrences across the world correlated to the temperature increase and elevated amount of greenhouse gases (GHGs) in the environment. This behavior has led corporate, and state and federal government entities to set climate goals to reduce carbon emissions across the world. This includes “net-zero by 20XX.” What does that mean?

In addition to improving the environment, net zero goals can help corporations and government save money. The government incentivizes companies to reduce carbon emissions through tax credits or utility incentives. Since buildings consume about 40% of the

energy produced by the U.S., reducing emissions within our infrastructure is key to meeting emission-reduction goals. For businesses reducing their carbon emissions, there are also some non-energy benefits such as increased production, efficiency, and reliability amongst equipment and employees, as well as improving indoor environmental quality (IEQ).

According to Michael Lenox, author of *The Decarbonization Imperative: Transforming the Global Economy by 2050*, there are three types of net-zero building designs: net zero energy, net zero carbon, and zero carbon. “Net zero *energy* buildings maximize energy efficiency then produce as much energy on a site as they use annually. Net-zero *carbon* buildings institute energy efficiency measures and then produce enough carbon-free renewable energy on site or purchased elsewhere to meet annual energy consumption. Zero-*carbon* buildings take it a step further, eliminating all fossil fuel equipment and powering the

Figure 1: Natural Disasters Across the World



Source: NCEI.noaa.gov - https://www.ncei.noaa.gov/sites/default/files/extremes-202208_final.png

remaining building operations using only clean energy or low-carbon fuels”.¹ This can be done through selecting an electricity supply provider if the building is in a deregulated energy state, where generation and distribution/transmission can be provided by different companies. With “net-zero” goals, the business and building owners strive to optimize an existing building and create a more sustainable ecosystem.

Understanding Carbon Emissions

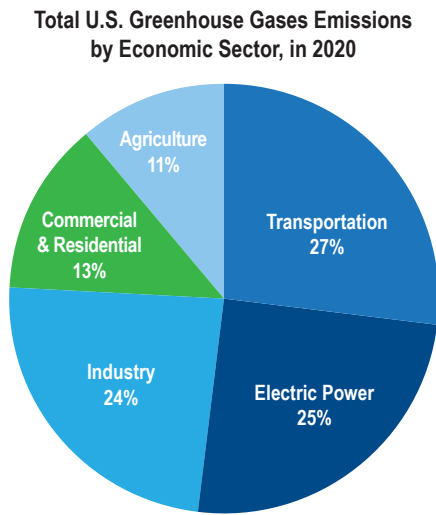
Some corporate strategic net zero goals have targeted emission goals. For example, in 2018 JLL defined itself as a leader in the real estate industry by creating a goal to reduce their Scopes 1 and 2 emissions by 68% and to reduce Scope 3 emissions by 53%, all by 2034. Another example is Boland’s partner Trane Technologies announcing they will reduce GHG emissions across the globe by 90% for Scope 1 and 2, and a 97% reduction in Scope 3. But what are these scopes?

Carbon emissions are classified under three scopes. Scope 1 measures direct emissions from owned or controlled sources such as company facilities and vehicles. Scope 2 covers indirect emissions from the generation of purchased electricity, steam, heating, and cooling such as leaving the lights on or over-cooling a building. Finally, Scope 3 consists of indirect emissions that occur in a company’s value chain; this includes company leases, commutes, business travel, and transporting capital goods.

Scientists and market leaders are focusing on carbon emissions (carbon dioxide), as this makes up 74.1% of GHG emissions. The following gases also contribute to GHG emissions: Methane (CH₄), Nitrous Oxide (N₂O), and Fluorinated gases (including HFCs and PFCs²). The graph in Figure 2 contains the breakdown of each economic sector’s usage for 2020. Projects that achieve net-zero goals also have a significant impact on the industry and transportation sector, as well,

¹ *The Decarbonization Imperative: Transforming the Global Economy by 2050* by Michel Lenox and Rebecca Duff (Chapter 5, pg 134).

Figure 2: Greenhouse Gas Emissions Breakdown



Source: <https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions#commercial-and-residential>

since manufacturing and transporting the building materials for these structures can have a large impact on global carbon emissions. “Energy consumption is by far the biggest source of human-caused greenhouse gas emissions, responsible for a whopping 75.6% or 37.6 gigatonnes of equivalent carbon dioxide (GtCO₂e) worldwide. The energy sector includes transportation, electricity and heat, buildings, manufacturing and construction, fugitive emissions and other fuel combustion”.² Therefore, a big step in reducing carbon emissions is electrification. This has come up in the news frequently because many new construction and deep energy retrofit projects will require buildings to transition to electric HVAC as electric grids become less emissions intensive. NEBB’s practices and certifications have a significant impact on both the commercial and residential sector.

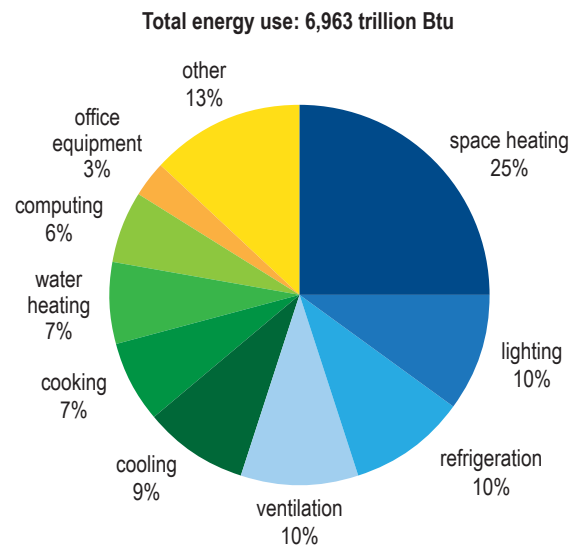
NEBB’s Impact

There are a few NEBB practices that have a direct impact on energy and decarbonization. For example, building enclosure testing, building system commis-

sioning, and retro-commissioning. Building enclosure testing is the first step to attaining a holistic view of the building. Investigating and enhancing the building envelope will confirm there are no leaks in the fenestration that could cause air leakage and condensation. Therefore, a need to no longer over-condition the space would improve comfort, health, and the environment.

For a typical office building, HVAC is approximately 40-50% of the electric bill. Ensuring a building is operating as expected based on design and specification requirements through building system commissioning can reduce energy consumption and carbon emissions by confirming the HVAC equipment is operating optimally. In addition to checking the mechanical system, looking at the lighting and electrical systems improves visual equity, thermal comfort, employee safety and potentially retention. With retro-commissioning, the building systems are analyzed to identify opportunities to implement energy conservation measures (ECMs) for an existing building. These opportunities can also include non-energy projects that reduce carbon emissions. An example of this would be to replace old equipment with high GWP refrigerants to equipment

Figure 3: Energy Consumption Breakdown in Commercial Buildings



Source: <https://www.eia.gov/consumption/commercial/reports/2012/energyusage/>

² <https://www.wri.org/insights/4-charts-explain-greenhouse-gas-emissions-countries-and-sectors>

with lower GWP; for example, R-11 has a significantly higher global warming potential (GWP) than R-514a. A recent project that Boland completed yielded a carbon emissions reduction of 369 metric ton/year by installing more efficient chillers with a low GWP.

Across the world, there are many companies and service providers assisting with carbon emission reductions. This includes innovative solutions in all sectors. Specifically, in the energy and building sector there are items such as electric stovetops, solar panels for hot water heating or powering a building, Variable Refrigerant Flow (VRF) HVAC systems, and electric vehicles. Trane Technologies, and similar companies, might offer remote services; this can reduce the Scope 1 emissions since service technicians are able to view systems and resolve problems remotely rather than travelling to and from the site.

Act:

Building owners, operators, engineers, and property managers can collaborate with local energy service providers to determine how to finance emissions and efficiency projects. In the Washington DC and surrounding areas, there are utility incentive programs that provide rebates for building owners to perform energy efficient upgrades and implement monitoring-based commissioning programs, and building tune up programs. These programs pay owners money to maintain efficiency and perform regular maintenance tasks such as cleaning coils in an AHU. Partnering with a building automation system technician or having a service contract for the Building Automation System (BAS) will help save money and reduce carbon emissions generally at a quick payback.

To have an overall impact on the building, there are options to choose the right HVAC equipment which could include a mechanical plant redesign. This includes energy efficient, low GWP refrigerants, electrified heating, specifically, heat pumps. Modifying a control or BAS for specific programming such as demand management, time of day schedules, and setpoint resets will reduce energy usage as well. Additional control optimizations such as schedule changes, temperature and setpoint resets, and chiller plant sequencing are



identified in ASHRAE Guideline 36 (*High Performance Sequences of Operation for HVAC Systems*). The last part to factor into a building is its purpose – understanding how the building is occupied and operated. Each person has an impact on the buildings they touch, live in, or work in that can shape the planet's future.

People are investing in net-zero; this investment is visible through ESG-focused companies in the stock market, grants provided by the government to assist with building envelope evaluations, and incentives provided by local utility companies. All of these efforts will help building owners and engineers tackle “low hanging fruit” to reduce carbon emissions. ●



A LOOK BACK AT THE 2022 NEBB ANNUAL CONFERENCE

by Jon Sheppard, Immediate Past-President

As I look back on the week we spent in Charleston, SC attending meetings, fishing, golfing, and eventually holding the 2022 NEBB Annual Conference, I realize that NEBB represents way more than just a certification. Oftentimes, as we finally achieve the certification we have been working so hard for through many years of experience and countless hours of study and seminars, we think we are done. We've achieved the goal - the end result. But what I've learned this year as 2022 President of this awesome organization is that what many think of as the end, or the final goal, is really just the beginning of the journey.

That certification that now hangs on your wall isn't just something that proves you are an expert in your field. It is a ticket to the network of experts in your field that will make you great at what you do. That is what the annual conference is all about! Above and beyond just learning and gaining required CECs each year, we attend the NEBB annual conference to network with like-minded people. We meet new friends. And we reunite with those that we only get to see once per year. We are back together as the family we know as NEBB!

2022 was an exceptional year to stand up on stage and watch so many people hug and smile and laugh.

We've spent the past few years seeing each other only through small screens or for short meetings. But now we're back! We got to have drinks, sit for a meal, enjoy time on the water or the golf course catching up and being personal again.

As I mentioned in my opening statements, I've been able to get through many of my difficult projects due to my network of friends within NEBB. As I ventured to new countries, I connected with NEBB CPs who had gone before me and offered guidance and mentorship in my new adventures. As I struggled with new equipment and new technologies, I had NEBB vendors come to my rescue. And as I learned the ropes of being NEBB President, board members stood beside and carried me as any good team does. This is when I truly learned what it meant to be a NEBB Professional. I just wish it hadn't taken me so long.

At the 2022 NEBB Annual Conference, our Thursday adventures took us to both golf courses and the inland waterways of Charleston. We had over 40 golfers, and over 30 fishers across 9 boats. While my boat didn't catch the biggest fish, I'd be willing to bet we had the most fun! It's something I wouldn't have done otherwise on my own, so once again, NEBB brought me to

new adventures. The experience left such an impression that my wife and I plan to return soon to charter another boat and spend a full day on the water.

The excitement continued Thursday evening with the opening session featuring Keynote Speaker Mike Goodwin. He spoke about being diligent, present and focused, along with lots of laughter along the way. Later, we rounded out the night at the Charleston Aquarium for the Get Acquainted Party. This is where I saw the magic of NEBB in action! People mingled, enjoyed fantastic food, laughed, and experienced all that the aquarium had to offer, including live animals out and about for us to meet!

Friday and Saturday brought us highly technical and insightful sessions. We had speakers from all over present on topics ranging from Procedural Standards to testing grow facilities to in-depth looks and training on software and meters. Every session was packed full and people were engaged on a level I've not witnessed before.

The end of Saturday is always one of my favorite times at the conference, as our vendors host a reception and we get to come together again and talk about what we've learned, who we've met, tell horror stories, and even give out some prizes and awards.

During the closing session, Mike Goodwin entertained us again, this time speaking about "championship

mentality" and dealing with the workplace of today. It put a nice perspective on the conference, the network, the friendships, and the organization as a whole. Furthermore, it gave us all something to work on with our individual firms, and how we deal with people in general. I appreciate Mike spending time with us throughout the conference and getting to know us, even though he still laughs about not having a clue what we do—just that it's "good stuff."

Then, of course, the hardest part of the whole thing... leaving. Once again, we part ways. Some of us will not see each other until next year, and some of us perhaps never again. We aren't promised tomorrow, and for too many, this past year was their last. Sadly, we lost two national volunteers who were actively serving terms in 2022. Roger Wehby was on the NEBB board of directors and passed away in February. Kevin Gaghan was the chair of the NEBB Sound and Vibration Committee and passed away in April. Throughout the conference, we learned of other great NEBB members who had passed away this past year, as well. All were celebrated for the wonderful people they were. They will be missed.

Next year, come out to beautiful Monterey, CA and don't miss the opportunity to reunite with friends, meet new friends, and take part in the community we know as NEBB. Thank you to everyone for their support this year! ●

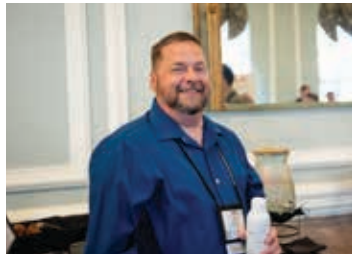


Opening Session of the 2022 NEBB Annual Conference

THE 2022 NEBB ANNUAL C



CONFERENCE IN PICTURES





Q&A

NEBB Across the Generations

Since 1971, NEBB has been serving firms and individuals that deliver high performance buildings and systems. As the premier international certifying association in the building industry today, NEBB thrives as a result of collaboration across various generations that all bring different experiences and perspectives to the table. We sat down with **NEBB President-Elect Luis Chinchilla** to discuss his personal journey with NEBB.

The NEBB Professional: Seeing that we are focused on the multigenerational aspect of NEBB, what generation do you personally identify with?

Luis Chinchilla: I'm generation X.

NP: How did you initially get involved with NEBB?

LC: I was working for Intel Corporation in Costa Rica when I had my first interaction with a NEBB certified firm back in 1997. It was literally like, "We have to be ready! Here comes the boogeyman!" And the worst part was that upon arrival of the NEBB certified firm to Costa Rica, things were not ready, so the firm members were heading back to the hotel to enjoy the swimming pool while we, the local team, were literally grilled!

Nine years after that experience, I did a one year assignment with Intel Corporation in Arizona, where NEBB had a cube within the facilities area to provide support and service. That was my first real interaction with the NEBB world, which in turn planted the seed of forming my own company for engineering services. I was always passionate about applied engineering, but upon learning more about NEBB, I realized why the NEBB firms are the “boogeyman.” It is when the rubber hits the road, when reality takes place and when the talking stops to yield the space for facts!

NP: What committees or positions have you been involved with?

LC: Upon founding my company in 2007, I quit my position as a site director at Intel Costa Rica and engaged in the certification process for my first discipline with NEBB. Since then, I have volunteered to work with many groups at NEBB. I’m now a NEBB Certified Professional in TAB, CPT and Cx. I was first a corresponding member of the TAB committee, then I became part of the Capital-MarVa Technical Committee. As a member of the committee, I was part of the team that taught one of the first TAB seminars in Spanish, with one session in Puerto Rico and one session in Costa Rica. After that, I was part of the Chapter Board and was Treasurer during 2016 and Chapter President for 2018. In parallel, I would say, I was literally bugging the CPT committee for things I was not seeing being considered and/or done. I had three abstracts accepted for presentation at the national conference in different years, so I have also spoken at NEBB Annual Conferences in areas ranging from business practices to advanced Modeling of cleanroom performance. In addition, I have had some articles published in past issues of *The NEBB Professional* regarding different NEBB topics.

Right after my period as Chapter President, I was invited to be part of the NEBB Board. I’ve been a member of the NEBB Board since 2019 and joined the EFC in 2021 as Treasurer. As Vice President, I was the Chair of the Exam Development Committee.

NP: Was it difficult to find the time to volunteer with NEBB?

LC: I do not think it was difficult to find the time to volunteer with NEBB as I’m passionate about it and have also opened up the space to volunteer for the other two CPs of our firm. What is difficult is to balance the passion to deliver things for NEBB with your day to day responsibilities!

NP: How do you feel your involvement with NEBB has been an investment in yourself and your career?

My involvement with NEBB has moved me out of my comfort zone, forced me to ensure I go back over all the technical details associated with a given topic, driven self-questioning the internal operations of our company to ensure we are doing the right things right, and also was one of the cornerstones of our company achieving the ISO-9001 certification. Our firm is not only NEBB certified, but also ISO certified.

NP: What would you like to see included in the future of NEBB to help adapt the association for generations to come?

LC: One recurrent topic that bugs my mind is the evolution that the industry is experiencing and I see it happening in two fronts, as part of the items to be associated with the generations to come:

- a. The segmentation of disciplines is becoming less clear and more gray day by day! We are running into projects where TAB might be combined with a little of Cx, or where TAB is combined with CPT, etc. Every day that passes is less pure NEBB disciplines and more mixed functions from multiple NEBB disciplines.
- b. Trying to see the future of what we do, technology has become so disruptive that I firmly believe we, at NEBB, have to jump onto the Artificial Intelligence bus. My article for the 2019 Quarter 4 issue of *The NEBB Professional* was about this, and I’m currently pursuing my degree in Artificial Intelligence at Carnegie Mellon University.



NP: Has any of this been initiated?

LC: Yes, but at the very very initial stages. One thing I've learned from my years at Intel is that time to market is critical to capitalize gains. We need to ensure NEBB is leading these efforts, and not accepting extremely long periods to get to the market with our product.

NP: What do you think could help get the next generation involved?

LC: We need NEBB to develop ways to merge technology with what we do, which is art. When I explain to people what it is that we do, I always tell them that what we do is art. Then, they give me that strange look, but I explain it very simply: NEBB disciplines are those building sciences where the engineering principles become reality and that is art!

NP: What is the biggest challenge for attracting future generations to this industry?

LC: The biggest challenge in attracting future generations is finding ways for them to discover that being out in the field conducting testing is equally or more

interesting than working all day long from a computer. Yes, you will get wet from a piping issue; yes, you will get itchy during a ductwork inspection due to the fiberglass insulation; yes, the last HEPA filter you are scanning after a long day of work will likely be the one to be replaced, but the satisfaction of literally "delivering birth" to a building that performs has no comparison. Future generations have been born and raised with technology at hand and they view that as the world in which they live, but there is more out there besides the technology itself.

NP: How do you think that challenge could be solved?

LC: We need to unleash creativity at all levels of the organization: CT, CP, NEBB members. We must foster a strong process mentality with broader data management skills and ensure we are able to speak to the future generations about how what we do today will be the foundation of the artificial intelligence found in building sciences 10 years from now. We need to "master the concept of labor substitution" as the recognized business writer Peter Druker elaborated.●

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My Path to Becoming a NEBB Certified Professional

By Timothy J. Thorpe

If I am being honest, I would have to say that my journey to becoming a certified NEBB TAB professional started about 20 years ago. I began as a control technician working on boilers and shortly after that I got a job doing residential HVAC installation. A few months later, I married my wife of 18 years, and at that point started to work for my father-in-law, Robert Hanger, who owned QT&B, LLC. I caught onto my new job responsibilities very quickly, and within a year, I was running as the lead on most of the jobs. Around that same time, my brother-in-law was taking over the business from his father, so I started working for Eric Hanger. I ended up becoming partners with Eric and continued to work hard, learning all I could in this field.

Unfortunately, my brother-in-law then passed away unexpectedly, meaning the success of the business was up to me. I proceeded to spend the next several years growing QT&B and working to become a certified professional (CP) in TAB. My father-in-law was looking forward to retiring and I knew that I needed

years in the field to qualify in order to apply for my CP. As time ticked on, I got very busy with a family and running a home. It seemed like time just kept moving away from me. It is crazy how fast 20 years can pass you by.

The year 2021 would prove to be a very sad time for our family. In September, my father-in-law passed away from complications of Covid-19. This unfortunate event left my company without a NEBB CP, so I had to make big moves fast. As the only one left to keep the business up and running, I got busy closing out jobs and focusing on my personal certifications.

In February, I applied for my TAB CT, which allowed me to attend the March TAB seminar and take my test to become a Certified Technician—the first step to becoming a NEBB CP in TAB.

I tried multiple times to follow the NEBB study guide for the certified technician (CT) and the CP exam,



but I struggled to follow the study course alone. After weeks of studying on my own, I attended the seminar held March 24-27 in Roswell, GA. For someone just going to get their CT, the class may be a little bit too much information. I felt so overwhelmed trying to keep up. But it's important to note that the instructors had a wealth of knowledge to share and were more than willing to help everyone.

I continued to go to the classes and do my best, but I did not feel comfortable with the test that was coming up because I was worried that I did not understand enough. I decided that it would probably be best to head back to Idaho and continue using the homework quizzes and tests from the seminar for another two weeks as my study guide.

After the two weeks had passed, I scheduled a test at the Idaho State University testing facility in Pocatello, Idaho. I was so nervous for the test, as it had been at least 24 years since I had last taken one. You can only imagine the joy I felt then when I began to take my test and all nervousness subsided as I flew right through it with a confidence that I had not felt through the whole process. I finished my test, submitted it, and was sur-

prised to immediately hear that I had successfully completed my first test.

I continued to study the seminar packet that was presented and provided by instructors Travis Short, Brian Sharkey and Donald Pittser. The genius thing about this seminar was that all of the tests, quizzes, and answer sheets needed were provided, allowing me to continue to quiz myself and work through the problems to perfect the solutions.

The next seminar I applied for was in Gaithersburg, MD. That seminar was for a Certified Professional. I continued to study and prepare for it each day by adding more and more quizzes from the previous seminar mixed in with my NEBB CT and CP study guide quizzes. I also used the NEBB app to check my answers on the quizzes from the study guide.

When I attended the Gaithersburg seminar, I felt so refreshed and confident at how well I was grasping the knowledge. I guess you could say that I just felt more relaxed and at ease amongst fellow attendees, as well as the instructors. Maybe my confidence level had been boosted from passing my first exam and all of the study-

ing that I had put in. Plus, the instructors really created a great learning environment for me and my test and balance peers. I tend to be much more of a hands-on or visual learner, so it was a great fit. The best part of the seminar was that the guys teaching it all worked in the same field as me, and had a vast realm of knowledge from years of the same type of work.

Finally, the time arrived for me to take my TAB CP written exam at NEBB TEC following the June seminar classes. Unlike the first test, I felt good showing up and was not nervous at all. Knowing I had been instructed by some of the best, most knowledgeable people, I felt more than ready to take it on. My confidence that morning was at 100 percent.

We were given a total of 5 hours to take the test, and by the third hour, I was finished. That allowed me enough time to recalculate everything one more time and double check my answers. I can honestly say that out of 100 questions, I only questioned myself on 3 of them.

I finished my test and scheduled my practical exam. Next, I took the other 2 online tests that I needed for the CP, and by the middle of August, I had passed everything and received my certifications.

It was such a wonderful relief to finally have everything completed! I was so relieved to be able to go back to work and start bidding jobs again.

Through this whole process, my main motivation was to keep my company running and my family fed. I am so grateful for NEBB and how helpful everyone was in helping me through my certification journey. I am particularly thankful for Shelly Lester with Bonneville EBB her guidance throughout his process and for instructors Travis Short, Donald Pittser, and Brian Sharkey for the help and knowledge they gave me as well as continue to give to others through their excellent seminars. ●

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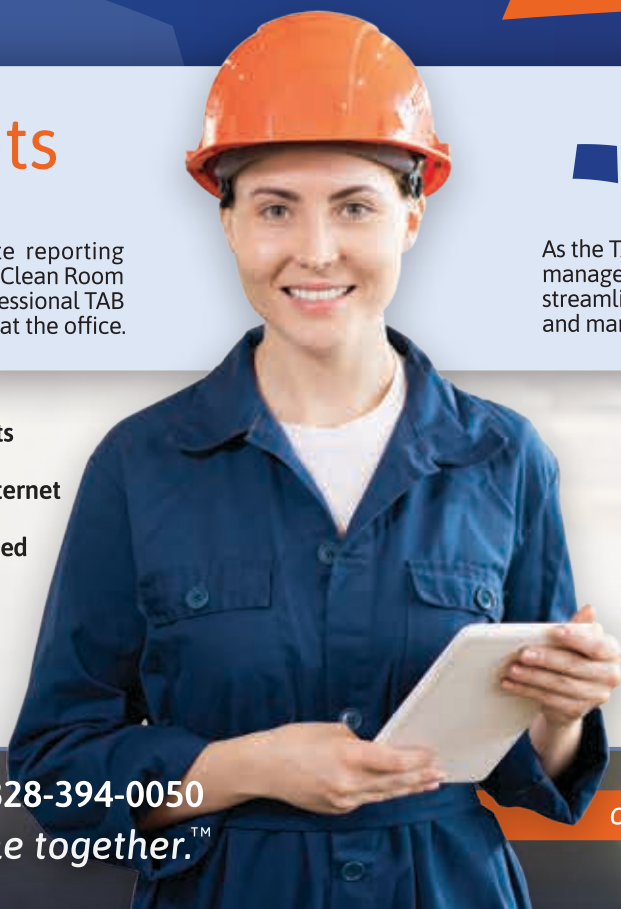
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NEBB YPN Gathers a Virtual Crowd for Happy Hour

By Tyler Hall, BSC CP, BET CP, TAB CT

On October 19, 2022, the NEBB YPN hosted its first-ever Virtual Happy Hour and Panel Discussion. Led by Jonathen Lloyd, TAB CP, and the YPN Committee members, the event's 87 attendees were welcomed and invited to grab a drink with their fellow YPNers.

After the introductions, committee member Dane Richards, PE, BET CP, BSC CP, dove into the night's topics by sharing the YPN roadmap, which outlines the various pathways to a successful career with a NEBB certified firm and how to give back by becoming a NEBB committee member. Dane also shared tips and tricks on preparing for NEBB certification, walking the guests through a certification application for candidacy.

NEBB's online Training Coordinator, Samantha Hawa, then introduced everyone to the new NEBB Learning Center, highlighting the website and the exciting technical resources available for the NEBB community.

The night's most fun, relatable, and well-received topic was "Recent Projects: The Good, The Bad, & the Ugly," where each YPN committee member shared their 'war' stories.

Nick Muscolino, TAB CP, kicked off the discussion by sharing stories from TAB projects he was involved with in Chicago. Many of the projects featured mechanical systems where the as-built conditions meant the systems were unable to be balanced. Problems ranged from fan belts in poor condition, exhaust fans short-cycling airflow from large holes cut into the roof curb, ductwork not connected to terminals, filthy duct/fan conditions, and incorrectly sized dampers for the application. The most humorous story Nick shared was of a rooftop unit they were scheduled to work on, but could not be balanced because it had been blown off the roof curb and was sitting upside down on the roof!

Next, I took the reins by sharing a story about a commissioning project in which above-ceiling surfaces were below the dewpoint temperature for an entire summer. I shared the project's backstory, beginning from the design phase to functional performance testing, where major condensation issues had led to severe damage and mold growth. The diagnostic techniques to determine the issue's root, along with supporting photos, were also shared.

Dane, an owner representative of a university, shared his unique perspective on problems with end-user maintainability and how to think outside traditional

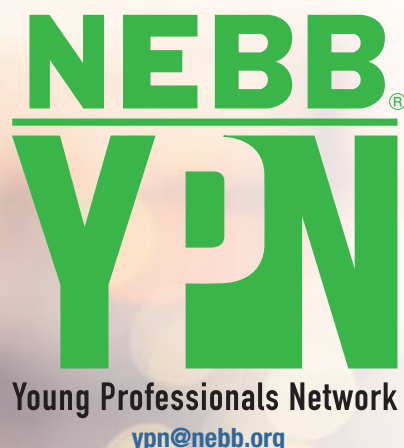
practices to provide the best product possible to the customer.

The night was not all about war stories, however. Nick quickly shifted gears and talked about his passion for project planning to ensure successful projects. Elaborating on the information he shared for the feature article in the 2022 - Quarter 4 issue of *The NEBB Professional*, Nick noted strategies for preplanning, scheduling, and contract document reviews. Jonathen then discussed the key to success—not just for construction but nearly all aspects of life: communication.

The evening was fun, informative, and well-received. The YPN could not be more thrilled with the turnout and reception of the 87 attendees. Before the event, all the YPN members were initially surprised by the rapid pace and high outcome of people registering for the event. But after a careful review of the feedback, it became clear that there is a need in the industry for community resources. With busy schedules and ever-evolving communication methods, a virtual setting proved to be a value-added service for the NEBB community.

If you were unable to attend the YPN Happy Hour, you can check it out online at the NEBB Learning Center (nebb.tovuti.io).

Be on the lookout for more NEBB and YPN virtual events coming soon! Various NEBB committees plan to make similar events available to the NEBB community in the near future. ●



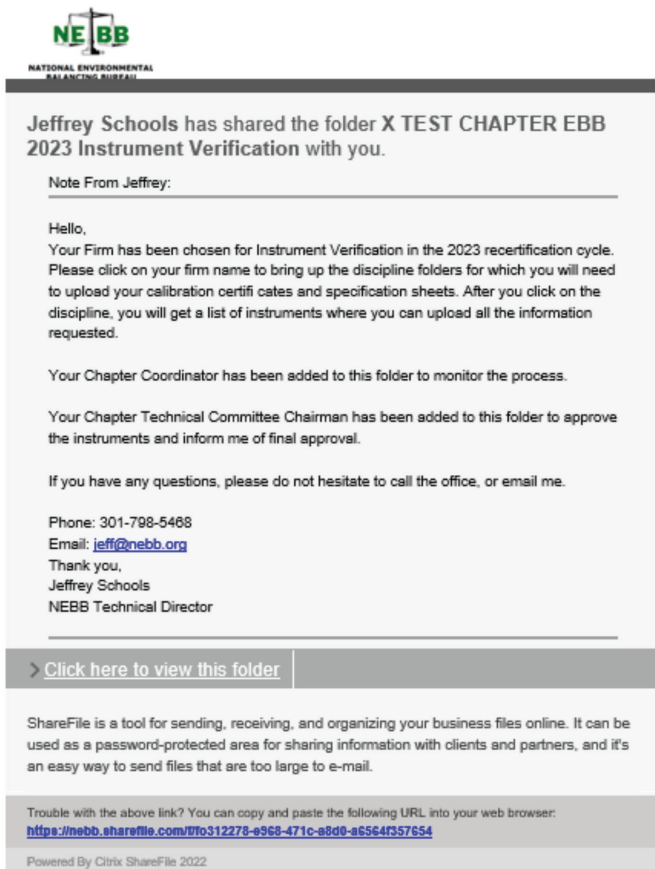


New Instrument Verification Process

By Jeff Schools | NEBB Technical Director

As you all know, NEBB has gone through a new process to check each firm's instruments during the recertification cycle. No longer will a firm add instruments to its Certelligence profile while they are recertifying. Instead, a percentage of firms will be randomly selected every year to have an Instrument Verification performed through ShareFile.

Figure 1.



If your firm is selected, your firm's Dedicated Certified Professional (DCP), along with the Chapter Technical Committee Chair and Chapter Coordinator will receive a notification from the NEBB Technical Director through ShareFile informing you that your firm has been chosen. The notification will look like the sample image in Figure 1..

Upon receiving the ShareFile notification, the firm DCP will be required to submit calibration certificates and specification sheets for the firm-owned instruments in accordance with the procedural standard for each discipline the firm holds. The firm will provide this information by uploading all documents to the ShareFile provided. Figure 2 shows an example of what the ShareFile would look like if your firm held every discipline. If your firm did hold every discipline, you would right-click on each discipline to bring up the instruments for which you need to upload certification certificates and specification sheets.

Figure 3 includes an example of the ShareFile for the TAB instruments. If your Firm only holds TAB Certification, you will find the TAB folder in your ShareFile and that is where you will be able to upload your information by dragging and dropping all required items into each folder.

The Chapter Technical Committee Chairman will monitor these files and upon completion of the upload, a member of the Technical Committee will review the submission. If the submission meets all the requirements, they will email the Technical Director to let him know that all is good. If the submission does not meet the requirements, the firm will be contacted via email and informed of what needs to be done to meet the requirements until the submission passes.

Once this process is complete, the firm DCP will receive the following email:

Hello,

Thank you for submitting your instruments to the NEBB ShareFile for verification in the 2023 cycle. After review by your Chapter Technical Committee, your submission has been approved and will be added to your Certelligence portal as final.

If you have any questions, please do not hesitate to call the office, or email me.

Phone: 301-798-5468

Email: jeff@nebb.org

Thank you,

*Jeffrey Schools,
NEBB Technical Director*

Figure 2.

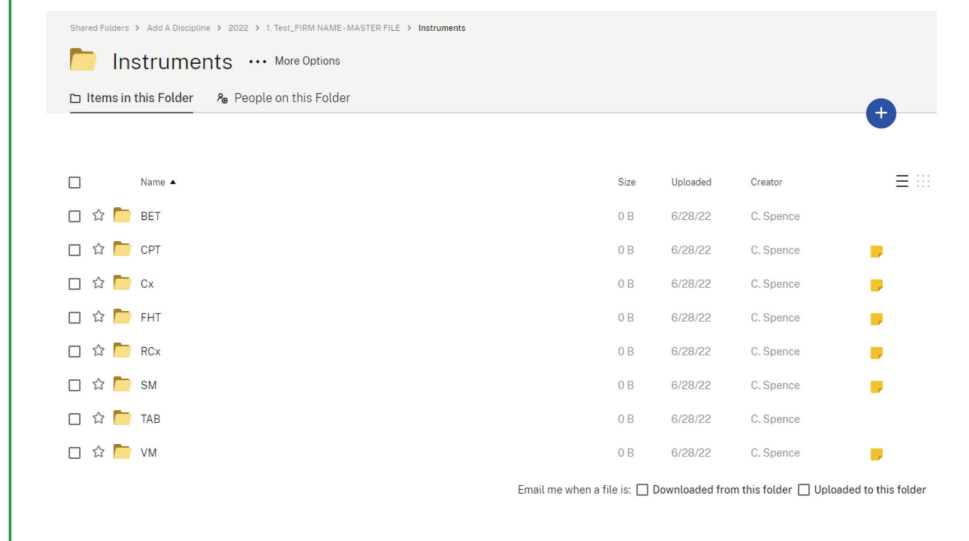
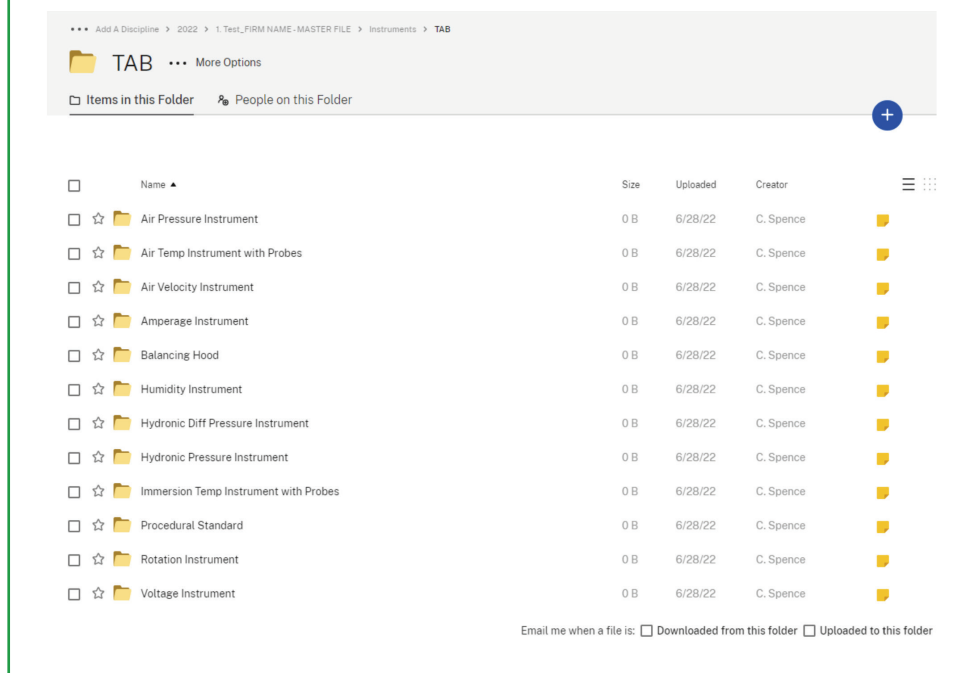


Figure 3.



So far, the 2023 recertification cycle has gone smoothly. By December 1, 2022, 89 percent of the randomly selected firms had uploaded their instruments, and 69 percent of the firms had been reviewed and finalized. I'd like to thank the Chapter Technical Chairmen and their committee for taking the time to review and finalize the submissions and the Chapter Coordinators for helping to move this process along. ●



WAR STORIES

Healthcare Facilities Diagnostics

by William C. Bailey, TEBB CC/TCC

This war story begins with a hospital having issues with subcooling. Receiving a phone call from the facility engineer I had built a relationship with a great time back when performing TAB services with the hospital, I was asked to review issues with some pneumatic variable air volume (VAV) boxes serving an area of the hospital. Calibrating pneumatic volume regulators and thermostats was outside his range of expertise.

Stopping by to talk with the facility engineer, I investigated what might be the issue. The facility engineer had asked if we could review a few volume regulators that he had adjusted.

As most of us with hospital experience know, some office areas are often VAV while other areas are constant air volume (CAV). The existing install was VAV primary air boxes with hot water reheat coils. The hot water reheat consisted of two- and three-way control valves going back to a steam bundle in a nearby mechanical room.

We started by reviewing the office and administration areas. The facility engineer had been going through the area in question, confirming the CFM values set were

what was spelled out on the information tag attached to the side of the VAV boxes. The areas in question had not had any recent modification or changes made with walls or duct systems and were still set as previous mechanical drawings had shown. Knowing this, we felt good verifying that values set based on the information on the sides of the VAV boxes were indeed correct.

After going through a few boxes, I watched the facility engineer go through the calibration procedure to confirm the adjustments he was making were indeed correct. After making these adjustments, I started to ask him more questions. He stated that although the area was currently comfortable, it was slightly cool in the mornings before the personnel staff arrived at work, resulting in complaints to the facility director.

With this in mind, I asked if we could do a few additional checks regarding the pneumatic boxes. I also asked if we could review the entering and exiting air and water temperatures of the system to compare to the mechanical schedules. I told the facility engineer that I had a good feeling that everything he had accomplished with adjustments to the minimum and

maximum airflows of the volume regulators were correct as to the design documents.

We started by testing the last box that was verified for airflow adjustments. When taking a temperature of the discharge, we observed the leaving temperature was 65 to 64 degrees Fahrenheit. At this point, we thought that the control valve was not 100% commanded or we had a restriction of GPM flow through a y-strainer. Commanding the thermostat to full heat, we verified the heating valve was 100% open with no branch air pressure from the thermostat being that it was a direct acting. Prior to pulling the y-strainer, we reviewed the inlet water temperature to the heating coil. We saw that the inlet water temperature was only 90 degrees Fahrenheit. At this point, I explained to the facility engineer that this had most likely been the problem the entire time. I asked if we could go to the mechanical room where the steam heat exchanger was located to determine if we had issues with the steam heat exchanger pneumatic control valve. The steam valves for these devices are typically closed, so I considered that we might have an issue with the diaphragm or output from the controller to open the valve. The reason these valves are normally closed is to help prevent issues with the heating loop if the valve should fail. If installed open, this could cause the heating loop to get way too warm and possibly cause the water loop to go to steam and flash if not caught in a sufficient amount

of time. The controls engineer designs the valves to fail closed whether it is pneumatic or DDC.

Looking into this issue further, we discovered that the steam valve was indeed controlling to the set-point value. After reaching out to others in management, we determined that the set point was dropped down to help save energy and the actual set point that was given was indeed 90 degrees. After seeing this, I recommended that the setting be adjusted to a minimum of 140 degrees as a starting point and adjust from there. I had explained to both the management and facility engineer that the original design was 180 degrees for an entering water temperature, but 9 times out of 10 the heating coils were more than enough capacity to meet the designs from original buildout documents. I suggested adjusting the set point while monitoring area space temperatures to confirm areas were indeed comfortable—rather than subcooling to try and save as much energy as possible—based also on perimeter offices and outdoor ambient temperatures.

In summary, we needed sufficient knowledge of pneumatic control devices on this call—they are not going to go away anytime soon. I also recommend that any business having energy audits and reviews ask their energy consultant to review the original design documents before making decisions that could affect overall operational conditions for various areas of the hospital, especially areas that would have CAV boxes installed. ●



Chapter NEWS

Florida EBB (FEBB) Chapter

The 42nd Recertification Seminar & Annual Chapter Meeting of Florida EBB (FEBB) is scheduled for April 27 - 28, 2023. The meetings will take place at The Brownwood Hotel and Spa located in The Villages, Florida. We have exciting plans for sessions that we are working on and looking forward to welcoming everyone. We will have our annual Corn Hole Fundraiser and have added a quick round of golf the day before to help a Florida college student or two in the engineering field.

Please contact the Chapter Coordinator Terry T. Wichlenski at 727-240-4254 or FEBBchapter@nebb.org for more details and the registration form.

FEBB is also currently working on the dates for the next NEBB TAB Practical Exams in Florida. Please check the NEBB website and/or contact our office and speak with Terry for more information.

Mid-South EBB (MEBB) Chapter

Concurrent with NEBB's Annual Conference, MEBB held its Recertification Seminar and Annual Meeting November 5-6, 2022 in Charleston, SC. MEBB was well represented with over 75 certified professionals (CPs), certified professionals (CTs), spouses/guests, and staff in attendance. CPs were able to earn the required CECs by attending sessions offered in Track 1 - BSC and TAB, Track 2 - CPT and IAQ, and/or Track 3 - Business and Leadership Practices.

During the Annual Membership Meeting on Sunday, November 6th, Vice President Joel Shannon presented the MEBB Founders Distinguished Service Award. Established by the MEBB Board in 2019, this prestigious award is given in honor of the eight founders of the chapter as special recognition to members who have truly made a distinguished contribution to the chapter and the industry throughout their career.

MEBB proudly awarded the Founders Distinguished Service Award in honor of Chester Thomas. Certified in July of 1974, Mr. Thomas wasted no time getting involved and helping establish the local chapter. He was appointed as the Technical Committee Director in 1979, and elected Chairman of the Board in 1980. As many CPs in the chapter can attest, Mr. Thomas soon began offering the practical exam at his shop in Macon, GA. In 1983, he was instrumental in the chapter's calibration testing center being approved, where hundreds of instruments were once calibrated.

Passionate about technical training, Mr. Thomas took on the responsibility of planning the chapter's recertification seminar during the MEBB's earlier years. Always seated at the front of the room, he was known to keep presenters on their toes, ensuring the integrity of the technical content being presented.

Mr. Thomas was active in aviation as a charter pilot and instructor. He was a member of the Atlanta Chapter of ASHRAE and was NEBB certified in Air, Hydraulics, Sound, and Vibration. A brilliant mind, as well as founder and owner of Thomas Balancing Service, Mr. Thomas was always giving of his time and knowledge. Through his dedication and leadership, he helped set



the foundation for the MEBB Chapter. Ronnie Green, long-time friend and colleague of Mr. Thomas accepted the award in his honor.

Tennessee EBB Chapter

Tennessee EBB (TEBB) had its end-of-year meeting on December 9, 2022. Some of the new items which NEBB brought to the table were reviewed, starting in July with introducing the chapters and membership to help make things easier. A few members actually came to the Nashville Machine Company office, while others joined a Microsoft Teams call for the meeting. One of the key items discussed was the updated NEBB Procedural Standards and how the roles of committee board members may have changed.

William Bailey announced that he would be stepping down as Chapter Coordinator and Technical Committee Chairman to allow the new board to identify other members for these positions. The new TEBB Board Members are as follows: Andrew Tittle – President, Wayne Ayers – Vice President, Rick Boto – Secretary/Treasurer, and Chris Palmer – TCC. The Board is reaching out to find a person to take on the role of Chapter Coordinator who is not affiliated with a Certified Firm.

Membership has continued to be receptive to what is coming our way, such as the need to read through the new Procedural Standards and what they state in detail.

It was clear, however, that not everyone understands what is being relayed in terms of upcoming changes and implementations that have been introduced. It was recommended that each Certified Professional go into the latest Procedural Standards and read what was signed off on in order to become a Certified Firm and Certified Professional. This was the suggested starting point because it is not uncommon to hurry through or miss a few of the details.

Another key topic that was addressed with membership was that National NEBB is looking for volunteers in all categories. William Bailey has elected to volunteer on the national level, supporting the TAB Committee run by Don Pittser.

"I am excited to work with the group and will try to do what I can for the things they need. As the past Chapter Coordinator and Technical Committee Chairman for TEBB, I tried my best to state in the correspondence the importance of membership being on the same page with the latest changes in Procedural Standards and the annual recertifications for Firms, CPs and CTs," stated Bailey. "I would like to say thanks to all members of TEBB. I appreciate all the group has done and thanks for allowing me to take on the duties for the chapter."

William Bailey started with the TEBB Chapter in 1997 and served as Secretary/Treasurer, Vice-President, President, Chapter Coordinator and Technical Committee Chairman over the 25 years he worked with TEBB. "It has been great working with everyone, but I felt it was time for other members to work these positions," he concluded. ●



CONTRIBUTORS



► **Meaghan Trentacost** is a Senior Energy Engineer at Boland and a Certified Energy Manager, WELL AP, and Data Center Energy Practitioner. Meaghan helps clients improve their building operations and identifies savings to help justify implementation. She meets with clients on a quarterly basis to understand their building goals and figure out a pathway to achievement.



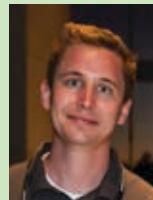
► **Jon Sheppard** is the immediate Past-President of NEBB and has served on the NEBB Board of Directors since 2015. With over 25 years in the industry, he holds NEBB Certifications in Building Systems Commissioning, Retro-Commissioning, TAB, as well as Sound and Vibration Measurement and has served as a member and chairman of both the Building Systems Commissioning and TAB Committees.



► **Luis Chinchilla** is the Director for OPIA Operaciones e Ingeniería de Avanzada de Centroamérica S.A. He is a licensed Chemical Engineer in Costa Rica and holds NEBB certifications in TAB, CPT, and Cx. As a member of the NEBB Board of Directors and NEBB Committee Chair, he has helped facilitate various NEBB initiatives at the chapter, committee, and national level.



► **William Bailey** has been a member of NEBB since 1997 and a member of ASHRAE since 2003. Hobbies are fishing for Largemouth and Smallmouth Bass on the Tennessee River/Kentucky Lake. Loves teaching classes related to HVAC for Associated Builders and Contractors and Service Group at NMC.



► **Tyler Hall** is the Director of Commissioning at Atlantic Testing and founding member of NEBB's Young Professionals Network Ad Hoc Committee.



► **Tim Thorpe** is a certified NEBB TAB professional with nearly 20 years of experience in the HVAC industry. He is President of QT&B, LLC in Preston, Idaho where he has worked for the past 17 years.



► **Jeff Schools** is the Past President of NEBB and currently works with the NEBB Headquarters team, NEBB committee chairs, and Chapter affairs members as NEBB Technical Director.

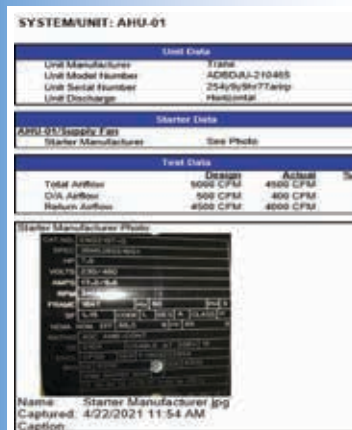


► **Tiffany Meyers** is the executive vice president of NEBB and works with the Board of Directors to oversee NEBB at a national level. She has previously served as director of operations for NEBB and chapter coordinator for Capital MarVa International NEBB.

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Clean Performance Testing Seminar

March 6-8, 2023, at NEBB TEC in Gaithersburg, MD
August 28-30, 2023 at NEBB TEC in Gaithersburg, MD

Testing Adjusting and Balancing Seminar

May 18-21, 2023, at NEBB TEC in Gaithersburg, MD
September 21-24, 2023 in Irving, TX

Building Enclosure Testing

July 10-12, 2023 at NEBB TEC in Gaithersburg, MD

Fume Hood Performance Testing

June 5-6, 2023 at NEBB TEC in Kansas City, MO

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