ASPE Convention&Expo OKLAHOMA CITY | 2026

TECHNICAL EDUCATION PROGRAM

The 2026 ASPE Convention & Expo offers 25 education sessions to help you take your career to the next level. Each session provides 0.125 CEUs for your licensing and certification requirements. (You must have a Full registration to attend.)

Session dates, times, and topics are subject to change.

TIME	HEALTHCARE	FIRE PROTECTION & MORE	WATER QUALITY	SYSTEM DESIGN	CODES & STANDARDS
TUESDAY, OCTOBER 13					
8:30 – 9:45 a.m.	Bringing Medical Gas System Design into the 21st Century, 4th Edition	Building More Than Systems: Building Trust and Relationships	Flow-Through Expansion Tanks and Legionella Risk Mitigation	The Role of Master Mixing Valves in Hot Water Distribution Systems	Closing the Loop: An Engineer's Guide to Onsite Water Reuse System Design and Compliance
3:15 – 4:30 p.m.	Medical Gas from a World Standards Perspective	Hands-on Workshop for Multi-Story Fittings in High-Rise Vertical Construction	Fundamentals of Reverse Osmosis Technology	Intelligent Water Pressure Boosting	ANSI/AAMI ST-108, NPDES, and Other Codes/Standards Affecting Facilities Design
WEDNESDAY, OCTOBER 14					
8:30 – 9:45 a.m.	Laboratory Gas Sources and Distribution	Evolution of Data Center Fire Protection	An In-Depth Look at Laboratory Waste Treatment and Pumping Systems	Thermal Expansion and Design Considerations for Domestic Water Heating and Hydronic Applications	How AWWA C904 Ensures the Reliability of PEX Tubing for Water Service Line Applications
10:00 – 11:15 a.m.	Why Testing, Inspection, and Verification Are Important to a Medical Gas Systems Designer	The Refrigerant Side of Heat Pump Water Heaters	Legionella Mitigation Strategies for a Hospital	Wastewater Pumps, Control Panels, and Systems	Pressure Boosting and Energy Optimization in Modern Plumbing Systems
11:30 a.m. – 12:45 p.m.	Designing for the Unpredictable in the Emergency Department	Designing for Success and Safety in Fire Protection Engineering and Firefighting Operations	Domestic Hot Water Recirculation in High-Rise Buildings	Integrated Design Pathways: Enhancing Water Harvesting Performance Through Manufacturer/Engineer Collaboration	Fallacies vs. Credibility of Proposed or Adopted Codes and Standards in Real-Life Applications

CONVENTION October 8–14 **EXPO** October 12–13

Register at expo.aspe.org

HEALTHCARE TRACK

Bringing Medical Gas System Design into the 21st Century, 4th Edition
Presented by Mark Allen, Mathis Carlson, and Jonathan Willard, LEED AP
Tuesday, October 13 | 8:30 – 9:45 a.m.
Why won't medical gas design stand still? Back by popular demand is this panel discussion with Mathis Carlson, Mark Allen, and Jonathan Willard, an audience-driven roundtable on developments in medical gases with insights to take into your next medical client interactions. Topics on the table include but are not limited to:

- Nitrous oxide: Should you pipe it in or not?
- Challenges in vacuum from new medical usages (external catheters)
- Combined WAGD and medical surgical vacuum systems: Should we really be doing this?
- Alternate design methods (elevated pressure systems)
- NFPA 55 and cryogenic fluid central supply systems
- Medical gas storage and the 55
- Zone valve and alarm planning
- Anesthetic waste gas and new capture technologies
- Onsite oxygen generation
- The "RFA"

Medical Gas from a World Standards Perspective
Presented by Mathis Carlson and Jonathan Willard, LEED AP
Tuesday, October 13 | 3:15 – 4:30 p.m.
The presenters will lead a discussion on some of the major medical gas standards including NFPA, CSA, ISO, HTM, and others. They will talk about the benefits found in some of the other standards and how incorporating them could provide a more robust medical gas system. The discussion will conclude with a review of some of the different sizing methods that are included in other standards.

Laboratory Gas Sources and Distribution
Presented by Beth Liberace and Nikita Patel, PE, MBA, ASSE 6060
Wednesday, October 14 | 8:30 – 9:45 a.m.
This session will detail the specialized gases required for modern laboratories, focusing on high-purity gas systems, central vacuum systems, clean compressed air, and cryogenics. It will emphasize the importance of maintaining specific gas purity levels and matching these requirements with appropriate materials, such as high-purity brass or orbitally welded stainless steel for critical applications. The session will also review safety and regulatory compliance, the classification of gases, maximum allowable quantities, sources of supply, and more.

Why Testing, Inspection, and Verification Are Important to a Medical Gas Systems Designer
Presented by Mathis Carlson
Wednesday, October 14 | 10:00 – 11:15 a.m.
This session will discuss the differences between testing, inspection, and verification of medical gas systems. It will step through the individual components of what is required, who should be conducting each step, what the process is, and what the reports should identify. It will also discuss why this is important knowledge for the design professional and what you should be looking for in regards to documentation.

Designing for the Unpredictable in the Emergency Department
Presented by Jeremy Williams, PE, ASSE 6060
Wednesday, October 14 | 11:30 a.m. – 12:45 p.m.
Emergency departments deal with a wide variety of medical cases and situations that can often be unpredictable for their staff. Likewise, building systems for emergency departments can be subjected to demands that are outside of what's considered normal. While it's not possible for medical professionals and engineers to predict everything that can happen in these facilities, plumbing systems must still be designed for demands that are outside of what's normal. This session will discuss the building and system elements of emergency departments, the work environment of those who work in them, and how plumbing designers can provide systems that are more resilient to what we can't predict.

FIRE PROTECTION & MORE TRACK

Building More Than Systems: Building Trust and Relationships
Presented by Lauren Berenato, Elvira Pita-Mejia, Frank Sanchez, CPD, GPD, LEED AP, ASSE 6060, and Christopher Winnie, PE, CPD
Tuesday, October 13 | 8:30 – 9:45 a.m.
Join this lively discussion on life outside of designing plumbing systems at our computers and the importance of building industry relationships. The three panelists will share their life lessons and experiences to help you understand the essential component of nurturing professional growth while fostering long-term success in the industry. Building your own personal brand is a skill set we can refine throughout our careers.

This interactive session is designed to equip you with fundamental business development strategies tailored specifically for your career stage. So many of us, while we progress in our careers, begin to be tasked with bringing in business to our firms with very little training on how to grow those relationships. You will gain valuable insights into how to effectively promote your work, build meaningful relationships, and establish a strong personal brand within the workplace environment.

The session will dive into practical techniques for demonstrating technical proficiency while communicating value clearly to clients and colleagues alike. Emphasizing the importance of professionalism, reliability, and proactive engagement, you will learn how these qualities can enhance your reputation, foster trust, and lead to repeat business opportunities. Through real-world anecdotes shared by experienced engineers, the session will provide relatable lessons on career progression, overcoming challenges, and seizing growth opportunities in the competitive MEP landscape. Join us to discover how to not only deliver exceptional engineering solutions, but also confidently market yourself and your team, paving the way for sustained success and leadership in the industry.

Hands-on Workshop for Multi-Story Fittings in High-Rise Vertical Construction
Presented by Paul Tully
Tuesday, October 13 | 3:15 – 4:30 p.m.
This session will look at a group of industry-based, nonproprietary, established cast iron drain, waste, and vent fittings designed for use in high-rise vertical construction projects with stacked, single-occupant restrooms. These projects include hospitality, hospitals, and condominiums. The session will explore the history and basic anatomy of these fittings, the types of projects where these fittings are used, the basic types of available fittings, and installation procedures. It also will include a hands-on segment where you will install a fitting assembly in a test jig to experience first-hand the advantages and value of this product group.

Evolution of Data Center Fire Protection
Presented by Shaun Kramer
Wednesday, October 14 | 8:30 – 9:45 a.m.
This session will cover the history of fire protection approaches for data centers, including the causes and effects of these fires. The presenter will review the challenges encountered when protecting data centers and explore current protection schemes and how each may be applicable. By participating, you will be able to:

- Identify what the potential fire hazards are within a data center
- Recognize the applicable standards used for data center protection
- Choose the appropriate fire protection system options for data centers

The Refrigerant Side of Heat Pump Water Heaters
Presented by Julius Ballanco, PE, CPD, FASPE
Wednesday, October 14 | 10:00 – 11:15 a.m.
With the use of heat pump water heaters increasing, plumbing engineers need to understand the refrigerant requirements of ASHRAE 15, 15.2, the Uniform Mechanical Code, and the International Mechanical Code. Heat pump water heater installations are more complex than non-heat pump water heaters. Depending on the refrigerant used in the system, the design and installation requirements will vary. The common refrigerants used fall into the category of either Group A1 or Group A2L, and this session will identify the difference between them. It also will address the refrigerant concentration limits (RCL), effective dispersal volume (EDV), effective dispersal volume charge (EDVC), mitigation measures, connected spaces, ventilation requirement options, and safety shutoff valves (SSOV). The difference between self-contained and split systems regarding installation requirements will be reviewed. The possible listing of ETRS water heaters in the future and their impact on design will also be discussed.

Designing for Success and Safety in Fire Protection Engineering and Firefighting Operations
Presented by E.J. Henninger
Wednesday, October 14 | 11:30 a.m. – 12:45 p.m.
Modern fire protection engineering often relies on code compliance and theoretical performance, yet real fireground operations develop under extreme time pressure, limited visibility, and rapidly changing conditions. This session bridges the gap between design norms and operational realities by examining how firefighters actually move, make decisions, and interact with building systems during the critical first minutes of an incident. Key factors such as hose stretches, stair geometry, corridor configuration, roof access, and ladderability will be explored as tactical elements of survivability, not just architectural features. The session will highlight how water supply, standpipe placement, and ventilation profiles impact fireground strategy and effectiveness. By understanding how crews use buildings and fire protection systems under stress, you can design to support rapid operational efficiency and improve life safety. The session will conclude by emphasizing the value of collaboration between engineers and fire service professionals to create buildings that not only perform in calculations, but also in the moments when lives depend on them.

WATER QUALITY TRACK

Flow-Through Expansion Tanks and Legionella Risk Mitigation
Presented by Tony Furst, MSEd, CPD, LEED AP
Tuesday, October 13 | 8:30 – 9:45 a.m.
This session will provide a comprehensive exploration of how domestic hot water system design impacts Legionella risk, with a focused examination of the role flow-through expansion tanks play in maintaining safe, high-performance building water systems. You will learn the environmental and operational factors that allow Legionella to thrive, including water stagnation,

temperature ranges, biofilm development, and system oversizing. The session will introduce multi-port flow-through expansion tanks and explain how their engineered internal flow path, continuous circulation, and separation of inlet and outlet points help eliminate the stagnant conditions associated with traditional single-port tanks. It will also review key regulatory and industry drivers–including ASHRAE 188, CDC guidance, and state-level requirements–that shape modern best practices in potable hot water design. Additional topics will include temperature management, tank sizing, flow rate considerations, and practical piping strategies such as parallel tank arrangements. By the end of the session, you will understand how proper equipment selection and thoughtful system layout improve water safety, reduce bacterial risk, and support compliance across a wide range of commercial building applications.

Fundamentals of Reverse Osmosis Technology
Presented by Stacey Hazelwood and Braden Storms
Tuesday, October 13 | 3:15 – 4:30 p.m.
Reverse osmosis (RO) has become an essential technology in commercial and institutional plumbing systems where high-quality water is critical to operations. From healthcare and hospitality to laboratories and manufacturing environments, plumbing professionals are increasingly involved in projects that require a clear understanding of how RO systems function, how they are properly applied, and how they integrate into broader mechanical systems.

This session will provide a practical overview of reverse osmosis technology tailored specifically to plumbing engineers, designers, and contractors. You will gain a foundational understanding of the science behind reverse osmosis, including membrane operation, system components, and performance characteristics. The session will also examine the limitations of RO systems and the water quality conditions that influence performance and membrane longevity.

Beyond the core RO unit, the session will explore the critical role of pretreatment and post-treatment equipment. Topics will include filtration technologies, hardness control strategies (softening vs. antiscalant), dechlorination, storage methods (atmospheric vs. pressurized), repressurization considerations, and corrosion control. Emphasis will be placed on how feedwater chemistry directly impacts system design decisions.

The session will conclude with a step-by-step example demonstrating how to size a complete RO system based on water analysis data and project demand. You will walk through evaluating flow requirements, peak and daily usage, recovery considerations, operating limits, and storage calculations to determine an appropriate system configuration. This session is designed to equip you with the knowledge required to confidently evaluate, specify, and coordinate RO systems within commercial building projects.

An In-Depth Look at Laboratory Waste Treatment and Pumping Systems
Presented by Dev Barochia and Martha Jacobs
Wednesday, October 14 | 8:30 – 9:45 a.m.
For experienced engineers as well as those just entering the field, lab plumbing and system design can be intimidating. This session will show you the step-by-step process for lab plumbing and system design. This will include what types of questions to ask, a review of different process variables, and a discussion of the types of water systems/plumbing involved in lab design. This will be accomplished on the backdrop of a recently completed case study to show how these various technologies work together for a finished project.

The discussion will be broken down between high-purity piping and system design. This will include water quality selection and applicability, piping design and connections, point-of-use systems and where they are applicable, as well as a discussion of

central systems. Many frequently asked questions will be explored, such as determining water quality, loop design, pitfalls to avoid, and when to utilize different high-purity water systems. The discussion will explore the optimization of plumbing system designs, focusing on key laboratory plumbing infrastructure such as hazardous waste-handling systems and specialty waste treatment where precision, efficiency, and safety are paramount.

The discussion will then shift to the waste side, specifically understanding and categorizing waste streams, whether they be chemicals, biological, or solvent wastes. Proper system design such as pH adjustment, effluent decontamination (also referred to as bio-kill), and solvent collection will be discussed. Waste conveyance technology will also be reviewed, in addition to system and pipe size, monitoring, and regulatory compliance.

Legionella Mitigation Strategies for a Hospital
Presented by Chris Nancrede, EIT, ASSE 12080
Wednesday, October 14 | 10:00 – 11:15 a.m.
Healthcare facilities serving immunocompromised populations—particularly bone marrow transplant (BMT) patients—require advanced water safety strategies that exceed typical regulatory expectations. This case study presents a proactive Legionella mitigation approach implemented during the renovation of a specialty hospital expansion housing a BMT unit. Recognizing the heightened susceptibility of these patients to waterborne pathogens, the project team integrated a comprehensive water management framework beginning early in the design phase.

Mitigation strategies included point-of-entry sub-micron filtration, high-temperature water generation with thermostatic balancing, engineered recirculation loops to minimize water stagnation, and elimination of dead legs. Advanced system controls were incorporated to maintain critical temperatures and monitor flow dynamics, supplemented by a secondary disinfection system selected based on a risk/benefit analysis of chemical compatibility, scalability, and impact on sensitive patient care equipment.

The case study demonstrates that embedding water safety risk mitigation into early design and construction activities improves system resilience, reduces startup contamination risk, and establishes a sustainable foundation for long-term waterborne pathogen control in environments serving highly vulnerable patient populations. This proactive model emphasizes multidisciplinary coordination among engineering, infection prevention, clinical leadership, and commissioning teams to achieve reliable Legionella control prior to patient occupancy.

Domestic Hot Water Recirculation in High-Rise Buildings
Presented by Jake Hicks, Cody Mack, and Kayla Redding
Wednesday, October 14 | 11:30 a.m. – 12:45 p.m.
Well-designed domestic hot water recirculation loops are essential for sustainable, energy-efficient, and low-maintenance plumbing systems. High-rise construction complicates these objectives, particularly when managing recirculation across different pressure zones. To exceed performance goals, engineers must precisely select and apply pressure-reducing valves, point-of-distribution mixing valves, and balancing valves. This session will:

- Analyze pressure-reduction zones
- Discuss point-of-distribution mixing
- Detail balancing strategies

SYSTEM DESIGN TRACK

The Role of Master Mixing Valves in Hot Water Distribution Systems

Presented by Adam DeVries

Tuesday, October 13 | 8:30 – 9:45 a.m.

Master mixing valves (TMVs and DMVs) are central devices in domestic hot water systems that blend hot and cold water to deliver a consistent, safe temperature throughout a building or facility. They are typically installed at the point of distribution and serve multiple outlets, distinguishing them from point-of-use valves. Their primary purpose is to prevent scalding (by limiting output), control Legionella growth (by allowing storage at higher temperatures), and ensure energy efficiency. The key standard is ASSE 1017, which outlines performance requirements for temperature-actuated mixing valves in hot water distribution systems.

By attending, you will be able to:

- Define master mixing valves and their role in hot water distribution systems
- Explain the operational mechanisms of TMVs and DMVs
- Compare the advantages, disadvantages, and applications of TMVs vs. DMVs
- Identify relevant standards for master mixing valves
- Select appropriate valves for various plumbing scenarios
- Understand the importance of proper sizing for master mixing valves and the limitations of traditional methods like Hunter's Curve in modern systems

Intelligent Water Pressure Boosting

Presented by Brian Soderholm

Tuesday, October 13 | 3:15 – 4:30 p.m.

Reliable water pressure is critical for modern commercial and healthcare facilities, and intelligent booster systems are transforming how this need is met. This session will cover the fundamentals of centrifugal pump operation and trace the evolution of booster system design toward high-efficiency solutions. It will review sizing methodologies and explore strategies for multi-floor pressure control using pressure-reducing valves and floor-specific examples. Beyond pressure management, intelligent systems integrate advanced water quality monitoring–tracking disinfectant residuals, dissolved solids (TDS), temperature, oxidation-reduction potential (ORP), and pH–to ensure safety and performance. Finally, the session will highlight next-generation features such as external sensor integration, automated equipment control, and emergency backup capabilities, delivering resilience and operational efficiency for critical water infrastructure.

Thermal Expansion and Design Considerations for Domestic Water Heating and Hydronic Applications

Presented by Brent Taylor

Wednesday, October 14 | 8:30 – 9:45 a.m.

Tanks have been used to control thermal expansion since the introduction of hydronic boilers in the early-1900s. With municipal cross-contamination programs becoming prevalent starting in the 1960s and ultimately leading to required backflow prevention devices being standard in many commercial applications by the 1980s, the need for thermal expansion controls became a critical component for domestic hot water systems–leading to the invention of the domestic thermal expansion tank in 1991. Although thermal expansion tanks are required for nearly all commercial projects that include domestic water heating, there continue to be substantial gaps in both design and installation that ultimately lead to operation and safety risk.

To help you avoid problems in your designs, this session will explore:

- Principles of thermal expansion
- Considerations for proper expansion tank sizing in domestic hot water and hydronic heating and cooling applications

- Regional trends in improper installations of expansion tanks and measures that can be implemented
- Expansion tank types for proper selection in project design
- Risks associated with approving import residential-grade expansion tanks intended for use with volume multifamily and single-family construction
- Where ASME vessels should be required in project design, regardless of gaps in the plumbing code
- Regional trends in improper scheduling and design on commercial projects
- Common gaps in code enforcement

Wastewater Pumps, Control Panels, and Systems
Presented by William Parker
Wednesday, October 14 | 10:00 – 11:15 a.m.
This session will provide a practical, engineering-focused overview of wastewater pump technologies, their applications, and the design considerations that drive reliable system performance. You will gain insight into pump selection criteria, hydraulic and operational challenges, and best practices for configuring lift stations. The session also will explore modern pump control strategies, including level sensing and smart monitoring systems, to reduce maintenance and enhance system resiliency.

Integrated Design Pathways: Enhancing Water Harvesting Performance Through Manufacturer/Engineer Collaboration
Presented by Shawn Crawford and Jonathan Franzese, PE, P.Eng, CPD, GPD
Wednesday, October 14 | 11:30 a.m. – 12:45 p.m.
As water harvesting systems are being increasingly incorporated into high-performance building designs, their success depends on precise coordination between plumbing engineers and system manufacturers. The expansion of harvested water applications from irrigation and cooling tower makeup to toilet flushing and process water is driving a growing need for technically aligned design workflows and cross-functional construction teams.

This session will provide a detailed examination of how manufacturer/plumbing engineer collaboration influences project feasibility, system hydraulics, water storage sizing, treatment train sizing, filtration and disinfection selection, controls integration, and long-term operational reliability. It will explore how early-stage dialogue and collaboration about runoff conveyance systems, pre-tank treatment, water storage, water usage demand rates, and effluent water quality performance targets determined by the intended end use lead to more accurate equipment specifications and reduce design rework. Technical topics will include:
- Early manufacturer/plumbing engineer feasibility assessment (supply vs. demand and primary cost factors to consider)
- Impacts of prefiltration efficiency and sediment loading on pump selection, pressure regulation, and filtration and disinfection selection
- Scope of work considerations for civil, plumbing, and electrical to reduce scope gaps as well as change orders
- Code-compliance pathways, including all relevant standards, state-level reclaimed water guidelines, and permitting challenges
- Failure modes commonly observed in the field and how to mitigate them through coordinated design reviews.

Case studies will highlight scenarios where misalignment between engineered system intent and manufacturer equipment constraints resulted in functional deficiencies and how collaborative design corrected those shortcomings. Conversely, examples of successful joint modeling, submittal refinement, and commissioning support will exemplify best practices for achieving the design intent.

Closing the Loop: An Engineer's Guide to Onsite Water Reuse System Design and Compliance
Presented by Jonathan Farr
Tuesday, October 13 | 8:30 – 9:45 a.m.
Water reuse is no longer a specialty niche; it's becoming a core competency for plumbing engineers as municipalities and building owners face mounting pressure to reduce potable water consumption and meet increasingly ambitious water-reduction targets. Designing a system that actually works in the field, however, requires navigating a complex convergence of regulatory considerations, engineering decisions, code requirements, and operational realities that no simple checklist can fully address. This session offers a deep dive into the engineering design and real-world implementation of onsite graywater, black water, and rainwater reuse systems. Starting from the feasibility analysis phase, you'll learn about the decision points that determine system viability: water balance calculations, demand-side matching, and the selection of treatment technologies appropriate for intended end uses. You will explore how building type, occupancy patterns, and site-specific constraints shape system architecture and where engineers commonly miscalculate.

The session will then turn to the regulatory environment, breaking down how the International Plumbing Code (IPC) and Uniform Plumbing Code (UPC) treat onsite reuse systems differently and how those differences cascade into real project implications. With state and local regulations continuing to evolve, you'll receive updated information on ordinances, grants, and other incentives that are available and how those may affect your project's design decisions.

The session will conclude with case studies drawn from commercial, multifamily, and institutional projects, examining how design intent translates (and sometimes doesn't) into operational performance. From navigating the regulatory landscape to commissioning challenges and long-term operational considerations, you will leave with a concrete, actionable framework for bringing onsite reuse systems to life on your next project.

ANSI/AAMI ST-108, NPDES, and Other Codes/Standards Affecting Facilities Design
Presented by Paul G. Galvin
Tuesday, October 13 | 3:15 – 4:30 p.m.
Are you aware of some of the more niche codes and standards that define how your facilities need to be designed? This session will provide an understanding of some key codes and standards that you may not fully know or understand. Geared toward newer and mid-career designers, this session will help you:

- Understand the major codes impacting plumbing design in the U.S.
- Understand discrepancies in some codes/standards and how to navigate them
- Achieve code/standard conformance with contract documents (specifications and drawings) in project design
- Get up to date with newer codes and standards, especially ANSI ST-108 and ASME BPE (bioprocessing equipment)

How AWWA C904 Ensures the Reliability of PEX Tubing for Water Service Line Applications
Presented by Lance MacNevin, P.Eng
Wednesday, October 14 | 8:30 – 9:45 a.m.
Crosslinked polyethylene (PEX) tubing has been used for water service and building supply line applications across North America for more than 25 years. AWWA C904, the controlling industry standard specification for this category of product, was originally published in 2006. The latest revision in 2022 added new requirements that help ensure that PEX water service tubing will meet and exceed customer expectations for protecting the health, safety, and welfare of water customers while delivering excellent durability and reliability.

This session will explain the technical requirements of AWWA C904 and how this standard can be used for guidance during the design of PEX water service lines. It will introduce the most important properties of PEX tubing for this application and describe new joining systems that are now permitted for use. Finally, it will introduce Appendix A, which covers installation topics such as bending, joining, thawing, HDD usage, testing, and disinfection.

Pressure Boosting and Energy Optimization in Modern Plumbing Systems
Presented by Irfan Ashrafi
Wednesday, October 14 | 10:00 – 11:15 a.m.
This session will provide a comprehensive technical overview of modern pressure-boosting system design, integrating hydraulic fundamentals with advanced efficiency and control strategies. It will begin with system design basics, including demand profiling, NPSH considerations, pump selection methodology, and an evaluation of different boosting configurations. The impact of chronic pump oversizing will be examined through energy modeling and life-cycle cost analysis, illustrating the operational penalties associated with inaccurate system design assumptions.

Plumbing code updates and the use of the Water Demand Calculator as a tool to right-size domestic water systems and reduce unnecessary overspecification will be discussed. Motor efficiency classifications, including a technical comparison of IE3 vs. IE5 motors, will be explored along with their influence on wire-to-water performance. Intelligent operation strategies–highlighting Power Optimal Pump Sequencing (POPS) and efficiency-based staging–will demonstrate how smart controls can maximize efficiency across all load conditions, with specific focus on low-flow stability and advanced control methodologies. ASHRAE 90.1 will also be discussed.

The session will incorporate real-world case studies, consumption patterns, and performance data to validate theoretical concepts and guide practical decision-making. It will conclude with a review of system certification requirements, compliance standards, and the importance of interdisciplinary collaboration during early design stages to optimize CAPEX, OPEX, and long-term system reliability.

Fallacies vs. Credibility of Proposed or Adopted Codes and Standards in Real-Life Applications
Presented by Dr. "Saum" K. Nour [Khosrow Nourmohammadi], PE, Ph.D., CPD, CFPE, LEED AP O+M, FASPE
Wednesday, October 14 | 11:30 a.m. – 12:45 p.m.
Amendments to codes and standards are proposed and adopted all the time, sometimes unfortunately with unintended consequences. In some cases, new technology forces amendments, and in other cases manufacturers introduce proposals. This session will explore the code amendment timing and implementation process to help you navigate the codes and understand how they impact the objectives of your designs. By participating, you will be able to identify the limits of the codes and their application to your projects and better respond to AHJ questions. By the end of the session you should be inspired to become more involved in the code-development process.

MEET THE PRESENTERS

Mark Allen has been involved in the medical gas industry since 1978. He started out of university with one of the earliest certification firms when the "certification" of medical gas systems was a concept yet to be widely accepted. He transitioned to industry in 1985 and since then has been involved in virtually all aspects of medical gas work, including testing and verification, regulatory, advocacy, product development, marketing, and education. Mark is an active member of the National Fire Protection Association Technical Committee on Medical Gas and Vacuum Systems and the Canadian Standards Association Technical Committee on Medical Gas and Vacuum Systems; he acts as secretary of the ISO TC121/SC6/WG4 committee dealing with the ISO medical gases standard; and he is Chair of the Medigham Oxygen Concentrators Industry Association. He has been honored by the MGPHO Verifier's organization as a special expert. Mark is the author of numerous journal articles, design guides, and other technical aids for the engineering of medical gases. He is now retired from his formal roles in industry, but remains involved in many activities related to better medical gas systems, including instruction for ASSE credentials, particularly the 6060 (Designer) course.

Irfan Ashrafi is a seasoned engineering professional with 13 years of industry experience, including 12 years with Grundfos, specializing in pressure-boosting systems, HVAC hydronics, wastewater pumping solutions, and domestic hot water recirculation design. He holds a Bachelor of Engineering in Mechanical Engineering from Osmania University (India) and a Master in Engineering Management from the University of Windsor. Throughout his tenure at Grundfos, Irfan has played a key role in advancing market adoption of high-efficiency pressure-boosting technologies, applying system-level hydraulic analysis, pump optimization principles, and energy modeling to deliver measurable performance improvements. His value-based engineering approach has supported significant market share growth while helping clients achieve reduced life-cycle costs and improved system reliability. At the Grundfos Sustainable Buildings Academy, Irfan delivers technical presentations on pressure-boosting and domestic hot water recirculation systems. His training integrates global best practices and design methodologies informed by his extensive project experience across the Middle East and North America. Irfan's teaching emphasizes system performance diagnostics, pump selection and control strategies, hydraulic balancing, and energy-efficient design tailored to modern building requirements.

Julius Ballanco, PE, CPD, FASPE, is President of JB Engineering and Code Consulting, P.C., and a Principal of Regulosity LLC. He is a Past President of ASPE and a Past President of the ASPE Research Foundation. He is a member of the ASPE College of Fellows and has been affiliated with the Chicago Chapter of ASPE for 47 years. He serves on many national consensus standard committees including ASHRAE, ASME, ASTM, ASSE, IAPMO, NSF, UL, and CSA. Julius authored many monthly columns on plumbing and mechanical code in *PM Engineer* magazine and *PM Magazine*. He has also authored a number of books, including the *Illustrated Plumbing Code Design Handbook, Ballanco on Plumbing,* the *BOCA7 National Plumbing Code Commentary,* and *Plumbing of Residential Fire Sprinklers,* and has also co-authored the *Illustrated National Plumbing Code Design Manual* and the *ASPE Plumbing Engineering & Design Handbook of Tables.* A graduate of Stevens Institute of Technology, he is both a licensed Professional Engineer and licensed Master Plumber.

Dev Barochia is a recent grad and up-and-coming chemical engineer. Dev's undergraduate research involved process simulation and optimization, which applies to many leading industries, including semiconductors, pharmaceuticals, and higher education. As a member of the sales engineering team, Dev has worked on many successful projects and is ready to share this knowledge at his first ASPE Convention & Expo. In his free time, Dev enjoys playing golf and hiking.

Lauren Berenato is an experienced business development leader specializing in plumbing and mechanical engineering. She currently serves as Senior Manager of Business Development at Bradford White, where she builds partnerships with engineering

firms, collaborates closely with manufacturer representatives, and develops key strategies for success with her colleagues. Lauren has been active in the plumbing industry since 2016, with career highlights including speaking at 33 local Chapters of ASPE and delivering five national-level presentations for ASPE. With a strong background in both business and law, Lauren has authored white papers and delivered national and international presentations on technical topics such as domestic hot water system design, code statutes, metallurgy, bacteria growth prevention in water systems, and more. She serves as the ASPE Region 1 Affiliate Liaison and the Women of ASPE Liaison for the Philadelphia Chapter. Lauren is recognized as an industry leader, earning the "2020 Supply House Times Women in Industry 10" recognition from *Supply House Times.* Lauren holds a Master's in Patent Law from the University of Notre Dame, a Juris Doctor from Widener University School of Law, and a Bachelor of Science in Industrial Engineering from Lehigh University.

Mathis Carlson is the Special Projects and Education Manager for MediTrac, the leading manufacturer of corrugated medical gas tubing. MediTrac is a revolutionary, first-of-its-kind product, approved by NFPA 99 for medical gas piping systems. At MediTrac, Mathis assists in medical gas system design and sizing, technical support, training, and general medical gas information and education. Prior to joining MediTrac, Mathis spent 12 years working as a medical gas verifier and instructor after working as a plumber specializing in medical gases for 10 years. Mathis holds multiple ASSE medical gas certifications including 6005 Specialist, 6010 Installer, 6015 Bulk Installer, 6020 Inspector, 6030 Verifier, 6035 Bulk Verifier, 6040 Maintenance, 6060 Designer, and 6050 Instructor. He also maintains his ASME IX brazing certification and Master Plumber license. In addition, he holds the MGPHO CMGV Certified Medical Gas Verifier credential. Mathis is serving as an alternate member of the NFPA 99 technical committee on medical gas piping systems, a member of the NFPA 55 technical committee on industrial and medical gases, a member of the ISO 7396 technical committee for piped medical gas systems, a member of the ASSE 6000 working group, and a member of the FGI Health Guidance Revision Plumbing Task Group. He is also currently serving as President of the Medical Gas Professional Healthcare Organization (MGPHO).

Shawn Crawford is the President of Rainwater Management Solutions (RMS) and a recognized leader in the water harvesting and alternative water industry, bringing more than two decades of hands-on experience to the field. Raised in Salem, Virginia, Shawn earned both his Bachelor of Science in Wood Science and Forest Products and his Master of Science from Virginia Tech, where he focused on Lean Manufacturing principles to reduce energy consumption. Shawn's commitment to sustainable water solutions began early–he installed his first potable rainwater harvesting system at age 11 and later led a study abroad program in Germany at 19, exploring alternative water reuse and solar technologies. Over the course of his career, he has designed and implemented more than 200 commercial rainwater systems nationwide, contributing to both residential and large-scale commercial applications. Since joining RMS in 2014, Shawn has played a central role in advancing the company's technical leadership and national impact. He actively shapes industry standards through his work on technical committees for IAPMO, NSF, and the American Rainwater Catchment System Association (ARCSA International). He served on the ARCSA Educational Committee and is an active member of the ARCSA Board of Directors. He also participates as a silent member of the NSF/ANSI 350 Standard Committee for Water Reuse Treatment Systems and an active technical committee member for the Water Efficiency and Sanitation Standard (WE-Stand). With deep technical expertise, a lifelong passion for water reuse, and a commitment to innovation, Shawn continues to champion resilient, sustainable water strategies for communities and organizations across the country.

With nearly two decades of leadership in hospitality, manufacturing, and design, **Jonathan Farr** brings a deep expertise in product innovation and sustainable solutions. Having led multi-tier teams serving Fortune 100 clients, he understands how to integrate sustainability seamlessly into business operations. At Epic Cleantec, he advances water reuse technologies that help organizations conserve and responsibly manage natural resources while maintaining exceptional performance standards.

Adam DeVries is a seasoned engineering leader and innovator with more than 20 years of experience in product development within the plumbing products industry. Known for his ability to bridge technical excellence with strategic business insight, he has held leadership roles that have driven the successful launch of numerous products and the creation of valuable intellectual property. Adam earned a Bachelor's degree in Mechanical Engineering Technology from Purdue University, where he built a strong foundation in engineering principles, design, and manufacturing processes. He later completed a Master of Business Administration (MBA) from Anderson University, enhancing his ability to align engineering initiatives with broader business objectives.

Throughout his career, Adam has excelled in a variety of engineering and leadership positions, including New Product Development Engineer, Value Management Engineer, Principal Product Engineer, and Vice President of Engineering and Design Studio. In these roles, he has been instrumental in guiding cross-functional teams from concept through commercialization, consistently delivering innovative solutions that meet market demands for performance, reliability, and user experience.

Jonathan Franzese, PE, P.Eng, CPD, GPD, is a Senior Associate at McKinstry in Seattle, with a background in mechanical, plumbing, and fire protection engineering. A graduate from Miami University (Oxford, Ohio), Jonathan has worked for consulting engineering firms as well as construction and design/build contractors. His passion is sustainability, focused on water reuse efforts including rainwater, greywater, and black water. Jonathan serves as the Vice President, Education for the American Society of Plumbing Engineers (ASPE), leading the Society's educational offerings. He also serves as a member of the Credentialing Committee and is committed to advancing the plumbing engineering field through ASPE's Certified in Plumbing Design (CPD) program. He lives in Seattle with his two young children and can be found on the baseball field coaching his son or chasing his daughter around the playground.

Tony J. Furst, MSEd, CPD, LEED AP, is a highly accomplished systems engineer and educator with more than 50 years of experience specializing in HVAC systems, sustainable building design, and professional training. With a unique blend of technical expertise and instructional leadership, Tony has dedicated his career to advancing industry knowledge and promoting energy-efficient practices in commercial building systems.

Paul G. Galvin is the Business Development Manager, Life Science/Institutional for GF Industrial Group Americas. He has been involved with the design and installation of process water piping, special waste piping, and special waste neutralization systems for more than 35 years. He has been an ASPE member affiliated with the Boston Chapter since 1979. Paul began his career at Camp, Dresser & McKee (now CDM-Smith) in the 1970s. While at CDM working as part of the Plumbing and Fire Protection Design Team, Paul attended Franklin Institute in Boston and Northeastern University. In 1986 he left the firm to join the GF Piping Systems team as a manufacturer representative in the Northeast. Along with his duties as a GF rep, from 1983 until 1999 Paul worked for and owned Monitoring Control Systems Inc., a manufacturing firm involved in the design and production of many acid/caustic injection pH neutralization systems for health and life science facilities across the Eastern U.S. In 2000 Paul became a full-time member of the GF Piping Systems team, beginning as the Northeast Area Sales Manager. In 2005 Paul became the Business Development Manager–Life Sciences for GF Piping. In his current position, he has presented at many ASPE Chapter meetings, symposiums, seminars, and conferences across the U.S. on the design of process water piping systems and special waste and neutralization systems.

Paul authored an article, "Plumbing Design 101, Special Waste Piping Systems," for ASPE's *Plumbing Systems & Design* magazine, which was re-published in *India Plumbing Today.* He co-authored an article for *Ultra Pure Water* magazine titled "Advantages of Recirculating Faucets to Contain POU Microbial Contamination," which was also presented as a paper at the UPW 2014 meeting. In 2017 Paul was presented with the Bernard J. McCarty Keystone Award by ASPE's Boston Chapter for being "instrumental in building and promoting the Boston Chapter through his tireless effort, endless support, and unwavering

dedication to the Chapter." Paul is a member of ASPE, ISPE, and ASME. He currently serves as a member of the Sub-Committee on Polymers and Elastomers and Sub-Committee for Materials Joining for the ASME Bio-Processing Equipment Standards Committee.

Stacey Hazelwood is a Business Development Manager with Canature WaterGroup, bringing more than 15 years of professional field sales experience to her role. With just over a year in the water treatment industry, Stacey has quickly developed a strong understanding of commercial water treatment and its applications. She holds a Bachelor of Science from Miami University in Oxford, Ohio, and works closely with customers, industry professionals, and partners to understand their needs and identify effective water treatment solutions. Known for her strong communication and relationship-building skills, Stacey brings a practical, customer-focused perspective to the industry and is passionate about helping others understand water treatment technologies and their applications.

E.J. Henninger is a Senior Project Lead with 25+ years of experience in the design of fire protection, plumbing, and process systems. He is also a firefighter in a rural volunteer fire department. E.J. is the Mission Leader for Building Firefighter Development, where he shares his knowledge with firefighters through specialized training that explains building and fire protection systems from an engineering perspective, helping bridge the gap between system design and emergency response.

Jake Hicks serves as the Senior Product Manager for plumbing products at Caleffi North America. Bringing 11 years of cross-industry expertise in new product design, including four years dedicated specifically to the plumbing sector, he bridges the gap between technical vision and market execution. At Caleffi, Jake leads new product development, supports engineering requests, and ensures adherence to product certifications and code compliance.

Martha Jacobs is a member of the Burt Process sales engineering team. Martha brings a unique perspective to the team, coming from a multidisciplinary background including education. As a first-time speaker for ASPE, Martha is excited to share her knowledge of plumbing system design. Outside of her career in engineering, Martha is a passionate sports fan and avid reader.

Shaun Kramer, Viking Corporation, Senior Director of Technical Services & Training, has been with Viking Corporation for 20 years. Shaun is NICET Level III certified in both Water-Based Systems Layout and Special Hazards Suppression Systems. Prior to joining Viking, Shaun was an Estimator/Project Manager/Sprinkler System Designer for eight years with two sprinkler contractors. He is a member on the NFPA 13 Technical Committee for Sprinkler Discharge Criteria, the NFPA 13 Correlating Committee, and the NFSA Engineering & Standards Committee.

Beth Liberace is a seasoned Project Manager and Product Specialist at Scientific Resources Southwest Inc., where she leverages 25+ years of experience in the life science industry. For the past decade, she has specialized in lab gas, compressed air, and vacuum systems, providing mission-critical solutions for complex laboratory environments. Beth began her career with a 14-year tenure at Rees Scientific before transitioning to focus on her family. Since returning to the field, she has dedicated the last decade to mastering lab gas and vacuum product systems. Today, she is a trusted expert in laboratory infrastructure, helping clients navigate technical challenges with precision and a communication-first approach. She is known for bridging the gap between sophisticated scientific requirements and practical infrastructure solutions.

Cody Mack is the National Training Manager at Caleffi North America. He has more than 20 years of experience in several roles, which include installation contractor, service technician, application engineer, and product manager, across the plumbing and heating industry. He travels all over North America, training industry professionals on the proper use and application of products, helping them get the most out of their systems.

Lance MacNevin, P.Eng, is the Senior Director of Engineering for the Plastics Pipe Institute's Building & Construction Division, with expertise on pressure pipes such as CPVC, HDPE, PEX, PE-RT, and PP. Lance has been in the plastic pipe industry since 1993, working as an R&D engineer, codes and standards specialist, and trainer for a major piping manufacturer for 20+ years before joining PPI in 2015. In this role, he focuses on plumbing and mechanical systems, coordinating research, education, and advocacy activities. He is an active member of ASHRAE, ASPE, ASTM, AWWA, CSA, IAPMO, ICC, IGSHPA, NSF, and RPA. He also serves on the ASPE Main Design Standards and Legislative Committees.

Chris Nancrede, EIT, ASSE 12080, is a recognized subject-matter expert in large-scale softeners and waterborne pathogen control. He started designing, servicing, and troubleshooting softeners, RO systems, and other industrial water systems in 1995 and has more than 15 years of experience diagnosing and solving Legionella problems in complex building water systems. He's also the patent holder of a high-efficiency water softener designed to cut salt costs by 40 percent and minimize Legionella growth.

Legionella Control Systems Inc., founded and led by Chris, is dedicated to the prevention and control of waterborne pathogens. A degreed mechanical engineer with an MBA in finance and IT, Chris has studied and worked in the U.S., Germany, Switzerland, and Japan, and he also sits on the AAMI ST95 sterilization standards committee for sterile processing. His background in industrial water systems, water purification, and Legionella mitigation, paired with strong engineering fundamentals, underpins a detailed mastery of industrial softener design that few can match. His expertise has been trusted by a broad spectrum of organizations, including Fortune 500 companies such as Anheuser-Busch, Chrysler, Ford, PepsiCo, Eli Lilly, and Roche; healthcare systems including VA Hospitals, Northwestern Medicine, and IU Health; and long-term care providers including Little Sisters of the Poor. That track record across some of the most demanding water systems in the country has established him as a leading authority for the most demanding water challenges.

Dr. Nour (Khosrow Nourmohammadi), PE, Ph.D., CPD, CFPE, LEED AP O+M, FASPE, has more than 39 years of experience in the field of engineering. He holds a Bachelor of Science in Mechanical Engineering from the University of Oklahoma and a Bachelor and Master of Science as well as a Doctor of Philosophy from the University of Illinois Urbana-Champaign. He is licensed in 28 states and is active in legal cases. His diversified work includes small building projects to large industrial facilities, for which he designed and specified a variety of equipment solutions and systems, performing construction support and multi-discipline coordination tasks. He also has done extensive work on commercial and residential projects where he has designed plumbing, HVAC, system ventilation, structural engineering, energy compliance forms, air quality control, and plumbing systems. As a founder of ACE, his experience and practical approach to pragmatic design have made it one of the most efficient and dynamic consulting engineering firms in Southern California. Dr. Nour has customized programs and has automated all aspects of engineering design for higher rates of accuracy and efficiency. Based on his extensive theoretical background, he has been able to innovate new designs where the UMC codes were required variance due to inadequacies of the governing codes. In addition, this background has given Dr. Nour the specialized ability to diagnose the California Energy Laws from theoretical to practical and construction views. Currently he lectures at the University of Southern California School of Architecture. He is active in LinkedIn and Greenerade.com. Prior to joining Absolute Consulting Engineers, Dr. Nour held various positions in research and academia, engineering design offices, and consultancy.

Will Parker has been with Liberty Pumps since 2019, starting in the Engineering Department with a focus on new product development and field research. In 2023, Will transitioned to the sales team as the Central Regional Sales Manager. Will earned a Bachelor's degree in Mechanical Engineering from the University of Dayton.

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With almost a decade of experience in the compressed gas and vacuum industry, **Nikita Patel, PE, MBA, ASSE 6060,** has a wealth of knowledge on equipment and pipeline design, sizing, and specifications. Nikita has a degree in Mechanical Engineering and completed her MBA in 2018. She is a licensed engineer in Pennsylvania and is a credentialed ASSE 6060 Medical Gas Designer. She works as a Sales Engineer for Sherman Engineering Company located near Philadelphia, covering their mid-Atlantic territory and representing well-known compressed air and vacuum manufacturers such as BeaconMedaes, Nash, Gardner Denver, and Elmo Rietschle. Niki is serving her second term as the appointed ASPE AYP Liaison and is a member of the Baltimore, Washington, D.C., and Philadelphia ASPE Chapters. She is Chair of the AYP Committee, serves on the Education Committee and Healthcare Credential Committee, and is a member of the International Chapter Development Working Group.

Elvira Pita-Mejia is an accomplished plumbing and mechanical engineering design professional with more than 25 years of industry experience. She currently serves as a Territory Sales Manager for Spirit Group Inc., where she provides technical expertise and supports engineers, contractors, and distributors across Florida. Elvira also contributes to industry advancement through her role as Vice President, Technical for ASPE's South Florida Chapter, supporting education, technical programs, and member development. A recognized leader within the Women of ASPE network, she represents the organization at national events and fosters professional growth among plumbing engineering professionals.

Kayla Redding is the Western Regional Sales Manager for Caleffi North America. With a degree in Mechanical Engineering and two decades of multi-industry expertise across manufacturing and plumbing/hydronics sectors, Kayla brings a diverse background and passion for problem solving. At Caleffi, Kayla acts as a technical partner, combining product sales with hands-on industry training and troubleshooting. Outside of work, Kayla can be found on the trails or in the mountains on her mountain bike, running, hiking, or camping.

Frank Sanchez, CPD, GPD, ASSE 6060, has nearly 25 years of experience as a Plumbing, Fire Protection, and Medical Gas Engineer. He is a Certified Plumbing Designer through ASPE and has a background in architecture. As an Associate Partner at Syska Hennessy Group in Chicago, Frank manages the Plumbing, Fire Protection, and Medical Gas Design Team. He oversees projects from owner RFPs, proposal development, and contract negotiations to project execution. He also plays a key role in business development for the Chicago office's healthcare sector. Frank oversees code compliance, design, and construction for projects across healthcare, aviation, and critical facilities. He is active in water management committees, developing solutions to prevent waterborne bacteria. Focused on delivering innovative, sustainable solutions, Frank supports his team through mentorship and collaboration. Syska Hennessy Group is a global engineering firm with more than 500 professionals, providing services in MEP, lighting, vertical transportation, and more. Frank's leadership ensures projects meet the highest standards of quality and performance.

Brian Soderholm is President of WCC, also known as Water Control Corporation, based in Ramsey, Minnesota. He has nearly 30 years of experience in the design and application of commercial water treatment systems all around North America. WCC was founded 55 years ago and specializes in engineered systems for commercial, institutional, and industrial applications. Brian is the father of three grown kids. He enjoys travelling, snowmobiling, running with his husky, Max, and sipping rye whiskey.

Braden Storms is a Commercial Applications Technician with Canature WaterGroup, bringing a strong technical and analytical perspective to the water treatment industry. He holds a B.S. in Physical Sciences from Biola University in Southern California and has developed extensive knowledge of commercial water treatment systems and their applications. In his role, Braden works closely with industry professionals to assess project requirements, provide technical guidance, and develop effective water treatment solutions. His technical expertise, attention to detail, and practical application experience allow him to approach complex water treatment challenges with a thoughtful and solutions-focused perspective.

Brent Taylor is a Sr. ASME Sales Engineer for Worthington Enterprises–Amtrol. He has a deep-rooted background in the plumbing industry, growing up around the manufacturer representative side of the business, where he worked from 2018–2025 prior to joining the Amtrol team. During his time in the rep business, a core focus was introducing sustainable products to the engineering community while working with leading manufacturers in North America. Brent has extensive experience with the sizing and selection of both water heaters and hydronic boilers, including the proper selection of trim components. As such, he has personally experienced the issues caused by the improper design, installation, and/or selection of ASME and non-ASME vessels, along with challenges the industry experiences by improper code enforcement. Brent has been actively engaged in both ASPE and ASHRAE in his home state of Arkansas and enjoys getting to know the many local ASPE Chapters across his territory.

Paul Tully is a Field Technical Representative for Charlotte Pipe and Foundry Company. He has been in the plumbing industry for more than 30 years, working with many facets of the construction industry. In his current position, his primary focus is educating engineers, designers, contractors, and code officials on products, industry trends, and issues, as well as resolving jobsite issues. Paul graduated from the University of North Texas with a BBA in Strategic Management. He is based in the Dallas area and serves the South Central and Rocky Mountain states.

Jonathan Willard, PMP, CHC, LEED AP, is the President and CEO of Acute Medical Gas Services and the Medical Gas Training Institute. He has worked in almost every aspect of the medical gas industry for more than 25 years, including regulatory compliance, consulting, design, construction, testing, training, and emergency preparedness. His involvement in healthcare projects has taken him all over the world, including a combat zone in Afghanistan, Guantanamo Bay, Cuba, the Korean Peninsula, Post-Hurricane Haiti, and his personal favorite, St. Lucia. Jonathan is Chair of the NFPA 55 Technical Committee on Industrial and Medical Gases and a principal voting member of the NFPA 99 Technical Committee on Medical Gas and Vacuum Piping Systems. His credentials include being a certified Project Management Professional (PMP), a Certified Healthcare Constructor (CHC), and a LEED Accredited Professional (AP), with a Master of Science in Business Education (MBE). He also proudly serves on the Medical Gas Professional Healthcare Organization (MGPHO) Board of Directors.

Jeremy Williams, PE, ASSE 6060, is a Senior Plumbing Engineer with more than 20 years of experience focused on healthcare facility systems. Serving as a Plumbing Technical Leader for the past six years, he specializes in domestic water system design with an emphasis on Legionella risk mitigation through control of water age, system hydraulics, and thermal management. Applying data-driven methodologies to evaluate fixture unit assumptions, diversity factors, and real-world demand profiles, leveraging historical flow data to optimize pipe sizing beyond traditional code minimums, his work challenges conventional sizing practices to balance velocity, pressure, turnover, and stagnation risk in complex healthcare environments. He has extensive experience designing high-acuity plumbing systems for large, multi-phase healthcare projects. His portfolio includes major VA medical centers and large-scale hospital expansions and renovations.

Chris Winnie, PE, CPD, is a Plumbing Engineer with more than a decade of experience in building systems design. During his nine years with SmithGroup, he has contributed to a diverse portfolio of higher education, healthcare, workplace, and laboratory projects. Chris is passionate about developing innovative, high-performance plumbing solutions that balance energy efficiency, resiliency, and cost-effectiveness while meeting the unique needs of each project.