



MONDAY, JUNE 11

8:30 AM - 9:30 AM

Fire Safety Challenges of Tall Wood Buildings Phase 2 Research Results

Attendees will hear a final report of a study on fire safety challenges of tall wood buildings. The goal of the research, which involved literature review, experiments, and modeling, was to quantify the contribution of cross-laminated timber (CLT) building elements in compartment fires. It provided a large amount of test data and a modeling tool needed to quantify the contribution of exposed CLT elements to compartment fires and to compare with other types of structural systems used in tall buildings. The data will enable designers to validate design equations and develop a fire protection strategy to mitigate the potential hazard to occupants, fire fighters, and property.

Reliable Emergency Power Systems: Real World Basics

Presented by the former Chair of the NFPA 110/111 Technical Committee on Emergency Power Supplies, this session will provide an overview of emergency power system operation and management. Topics addressed will include inspection, testing, and maintenance as well as load assessment, finding and mitigating vulnerabilities, and planning for power failures. The session will detail best practices to improve emergency power dependability and explain how to spot problematic conditions using observations at dozens of facilities.

Pre-Incident Planning — Standard Updates and Applications at Industrial Facilities

This presentation by the current Chair of the NFPA 1620 Technical Committee and the Director, EHS and Emergency Services for Bristol-Myers Squibb (and past TC Chair) will detail updates underway for the 2020 edition of NFPA 1620, Standard for Pre-Incident Planning. The session will also include an explanation of how a major pharmaceutical corporation implemented a Pre-Incident Planning program and how attendees can implement a similar approach at their own facilities.

On-Duty Firefighter Fatalities in the U.S. — Review of 2017 Experience and Related NIOSH Recommendations

The findings from NFPA's study of 2017 on-duty U.S. firefighter fatalities will be presented. The recommendations from past NIOSH investigations of similar fatalities — which cite NFPA standards — will be presented and discussed, as will current efforts to address firefighter deaths due to cancer and other medical conditions.

Foam Application for High Hazard Flammable Train (HHFT) Fires

High hazard flammable train (HHFT) fires are low-frequency, high-consequence response scenarios. First responders currently default to an area-based method defined in NFPA 11, *Standard for Low-, Medium-, and High-Expansion Foam*, for calculating foam quantities needed, but the values determined using NFPA 11 may not be accurate for the complex nature of these fires. This session will detail a study that examined event data for 12 HHFT derailments involving a variety of fuels and reviewed available literature, tactical responses, and post-incident analysis. Among the findings that will be discussed: there are strategic points in the event timeline where foam application is most effective and proper cooling of railcars and the development of a tactical action plan are vital to an effective response.

2018 SESSIONS

MONDAY, JUNE 11 *CONT.*

8:30 AM - 9:30 AM

Has NFPA 101, *Life Safety Code*, Made a Difference in Health Care Fire Safety?

This session will review recorded health care facility fire losses from 1980 to 2014 compared to major changes in the Life Safety Code and industry trends. Topics addressed will include the impact of mandatory automatic sprinklers, smoking policies, and changing patient types, as well as evolving levels of life safety and risk. Also discussed will be needs for code changes in the 2021 edition.

Explosion Suppression Systems: A New Evaluation Methodology

An explosion suppression system detects and quenches an explosion by activating one or more suppressant bottles to rapidly discharge suppressant into a protected enclosure, potentially reducing damaging explosion pressures to less than the design strength of the enclosure. FM Approval Standard 5700, Explosion Suppression Systems, is currently solely equipment-based. A new methodology was developed to evaluate system-level performance. This presentation will introduce the new methodology and highlight criteria for use in the revision to the Standard 5700 and discuss differences between that and the European Standard, EN 14373. It will demonstrate that the revised FM Approvals Standard will be consistent with NFPA 69.

Home Fire Sprinkler Coalition: A Case Study in Providing Incentives and Saving Lives

The Home Fire Sprinkler Coalition introduced new tools to teach the need for and value of offering trade ups as incentives to get developments sprinklered. This case study will review years of working with planners to offer developer incentives that resulted in more than 2,000 sprinklered homes. The presentation will also address the role of home fire sprinklers related to firefighter health and safety and provide information to help fire departments merge sprinkler education into community risk reduction strategies.

10:00 AM - 11:00 / 11:30 AM

Regulating Timber in Tall Buildings

The use of timber in tall buildings is receiving increased attention. The obvious concern is the combustible building structure, which both contributes to the fuel load of the building and presents vulnerability to a fire that could affect its fire resistance. Recent studies include work by the NFPA Research Foundation. The ICC Ad Hoc Committee started in 2016. The work of the Ad Hoc Committee will conclude with the deadline for proposed code changes to the International Codes. The ICC work also includes a series of full-scale fire tests upon which the code requirements will be based. The presentation will address the wide range of topics affected by the proposal and studied by the ICC Ad Hoc Committee; the approach being taken to incorporate technical requirements into the building code; a summary of the fire tests; and proposed code language developed to date.

The New NFPA 855, *Standard for the Installation of Stationary Storage Systems* — Content and Concepts and Training and Code Changes

With the present growth of the energy storage industry, the National Fire Protection Association (NFPA) is actively engaged in a number of diverse initiatives aimed at promoting the continued safe and sustainable expansion of this renewable technology. On its current schedule NFPA 855 should be completed with the second draft meeting and balloting by May 2018. This presentation will be able to give the most up to date and complete information on the contents of the new NFPA 855, *Standard for the Installation of Stationary Storage Systems*.



MONDAY, JUNE 11 CONT.

10:00 AM - 11:00 / 11:30 AM

Cannabis Growing and Fire Safety: The AHJ Perspective

This roundtable discussion will detail cannabis growing fire safety code enforcement challenges and case studies where these challenges were overcome. The presenters — a representative from Colorado, Washington State, California, Massachusetts, and the moderator from Massachusetts — will discuss their approaches to common challenges and provide a dynamic and interactive presentation. The newly published NFPA 1 Chapter 38 will be discussed.

Emergency Preparedness in Long Term Care Facilities — Advanced Warning Doesn't Ensure Safety

While devastating beyond expectations, Hurricanes Harvey and Irma were not a surprise to the residents of Texas and Florida. Even with advanced warning, residents of several licensed nursing and assisted living facilities found themselves in life threatening, yet avoidable, circumstances. This session will compare the prescriptive requirements of NFPA 101, *Life Safety Code*; NFPA 1600, *Standard on Disaster/Emergency Management and Business Continuity/Continuity of Operations Programs*; and state and federal rules with the realities of planning and executing emergency preparedness plans during and after a disaster. The presenters will share personal experiences from both the private operations side and the state agencies tasked with regulating them. Discussions will include real examples of preparedness plans that did and did not work. The session will also provide guidance in the creation and implementation of effective plans for long term care facilities.

Life Safety Through Political Advocacy — A Panel Discussion of Fire Service Leaders

This panel will focus on legislative advocacy in three geographically and politically divergent states. The presenters are fire service leaders from California, Maryland, and Texas who are proponents of implementing fire sprinkler ordinances in newly constructed single-family and duplex homes. They will discuss the strategies that allowed some legislation to be successful as well as the problems they encountered and lessons learned and identify how attendees can implement a similar approach in their own states and communities.

NFPA 70E-2018, *Standard for Electrical Safety in the Workplace*, Changes: What Qualified Electrical Workers Need to Know

This presentation will outline 2018 edition changes in the organization of NFPA 70E, *Standard for Electrical Safety in the Workplace*, using specific examples to explain how the reorganization, along with other changes such as the addition of supporting data, makes it easier for users to follow the standard and to understand critical information. The discussion will also address supporting data added to improve understanding of the tables and required changes to Electrical Safe Work Practices written programs, including new JSA requirements.

The New SFPE Guide to Human Behavior in Fire

This presentation will provide an overview of the 2nd edition of the SFPE Guide to Human Behavior in Fire. The Guide enhances the presentation of the topics in the 1st edition and adds coverage of such subjects as occupant behavioral scenarios, toxicity assessment, visibility-in-smoke guidance, emergency management of building occupants, and emergency notification/messaging, as well as egress model selection, validation, and verification.

Addressing PTSD in the Firehouse

Mental health is as important as physical health to firefighter safety. Post-traumatic stress disorder (PTSD) is a huge issue among first responders, many of whom feel pressure to “stay professional” and “suck it up.” A paradigm shift is needed to combat the stigma associated with getting help. The presenter, a Wyoming firefighter and burn survivor, will share his personal journey and provide insights on how resilient any human being can be as well as guidance on the many resources, tools, and approaches to addressing this problem.

2018 SESSIONS

TUESDAY, JUNE 12

8:00 AM - 9:00 AM

Fire Safety in South Africa's Informal Settlements: Researching the Use of Smoke Alarm Technology

Cape Town has one of the highest fire-related fatality rates in South Africa: 7.9 deaths per 100,000 population. Most of these deaths occur in under-resourced, low-income communities known as informal settlements. In an effort to reduce dwelling losses and deaths in informal settlement fires, the Western Cape Government, Fire and Rescue Services have collaborated with Stellenbosch University to conduct research on the use of smoke alarm technology in several high fire risk communities. This session will discuss the full-scale burn tests they conducted. In addition, three pilot sites were identified for installation of the devices. This multidisciplinary research recognizes the positive outcome of installing smoke alarms in impoverished communities.

Improving Fire and Life Safety in a Vertical World

This presentation will provide a global perspective on evolving methods for high-rise building evacuation. Information gathered from 11 countries worldwide will be analyzed on three fronts: the buildings (codes, standards, design, construction, and ongoing management), occupants (including how to implement safety procedures to manage the occupants), and incidents (previous high-rise incidents, including challenges facing firefighters).

Energy Storage Systems (ESS): Fire Service Safety Considerations

Energy storage technologies are becoming more prevalent due to the flexibility and resiliency they provide to communities, government, utilities, businesses, and individual consumers. Attendees will learn about the state-of-the-art of this emerging technology, fire suppression best practices, and training focused on the fire service. Existing gaps in knowledge and resources will be discussed, as well as recommended next steps to promote fire service and consumer safety, including the growth of partnerships between the energy storage and fire safety industries.

NFPA 70E, Standard for Electrical Safety in the Workplace, and Risk Assessment: Addressing 2018 Edition Requirements

NFPA 70E, *Standard for Electrical Safety in the Workplace*, continues to address the concept of risk assessment and mitigation. The 2018 edition introduces human error as a factor in assessing the likelihood of an incident. To properly assess risk, qualified persons must be familiar with human performance concepts as they pertain to risk, as well as other factors that affect the likelihood variable. This presentation will cover the overall risk assessment process as required by NFPA 70E, focusing on the likelihood variable as it pertains to the most recent requirements.

The Fire Inspector as an Educator — The Educator as a Fire Inspector

An Inspector/Educator Team approach enhances the service each discipline delivers to the community, contributing to reduced fire losses. This session will examine how a fire inspector can be more effective with a focus on education to gain greater compliance and how an educator's understanding of codes can improve the value of the education provided. This awareness creates an expanded force of code-aware safety professionals in the community.



TUESDAY, JUNE 12 CONT.

8:00 AM - 9:00 AM

Health, Safety & Behavioral Wellness Needs of the U.S. Fire Service

Since 2001, NFPA has conducted a national survey of over 26,000 municipal fire departments. In 2015, this survey was modified to address the lack of understanding of firefighter fitness, health, and behavioral health. This presentation will focus on quantifying how the U.S. fire service is maintaining basic firefighter fitness, health, and behavioral health programs and why it is important to do so. In addition, the presenters will discuss related NFPA standards that help mitigate these risk factors in the fire service.

Digital Smart Maintenance

Data is involved in every aspect of a property's life cycle. Attendees will hear how digitization of that data can lead to more efficient management of spaces and responses. For example, digitizing fire compartments and evacuation routes in a facility allows for real-time shifting of routes and guidance of occupants to safe locations. A digitized approach to facility management allows for faster diagnosis of issues and more timely responses. These concepts will be reinforced through case studies.

NFPA 13R and NFPA 13D, Residential Sprinkler Standards: Changes

In this session, the presenters will review significant proposed changes to NFPA 13D and NFPA 13R that were approved by the Technical Committee. Also discussed will be some of the proposed changes that were not approved.

Firebrand Production in Wildland and WUI Fires: Experimental Data Collection

Ember production and the spread of firebrands are considered major factors in wildland and wildland-urban interface (WUI) fires, which can have massive economic impacts in terms of both structural loss and the cost of fire suppression and re-forestation. This presentation will discuss recent efforts to investigate fire ember production from burning wildland and structural fuels in the wildland and WUI.

9:30 AM - 10:30 AM

Global Research Impacting the Fire Community

Across the globe, the need for knowledge to maintain a desired safety level through appropriate standards is greater than ever before. Focusing on the built environment, this presentation will discuss the most important trends affecting fire safety and provide an overview of the research performed by different players globally to better understand the implications for the fire community.

Developing a Comprehensive Electrical Safety Program

Attendees will learn how NFPA 70E, NFPA 70B, and OSHA electrical standards can be used to build a comprehensive, effective electrical safety program for any facility.

What Artificial Intelligence Can (and Cannot) Do for Firefighting, Emergency Response, and Safety Inspections

This session will examine recent advances in "deep learning" technology, such as those developed by Google and Facebook, identifying how such technology can be applied to address fire and emergency issues. The presentation will highlight cutting-edge academic and industry research as well as work done by NFPA. Included will be examples from computer vision, natural language processing, decision support, and predictive analytics. The examples will focus on substantive areas such as wildfire prediction, processing of fire images of UAV and satellite platforms, text mining of fire narratives and social media, and prioritizing risks in commercial properties.

Reducing the Home Fire Problem: Data Driving Solutions

Five major causes of home fires and fire deaths have been identified: cooking, heating, electrical distribution/lighting, intentional fires, and smoking. This session will use findings from NFPA's statistical reports to explain how these fires occur, who is dying in them, and progress made in reducing such fires and deaths—including the role of the 5 E's of Prevention. The presenters will explain NFPA's process to develop consensus-based fire prevention messaging through its Educational Messaging Advisory Committee (EMAC) and provide an overview of free educational resources available to communities working to help residents reduce the risks of home fires.

SESSIONS

TUESDAY, JUNE 12 CONT.

9:30 AM - 10:30 AM

Healthy In, Healthy Out — Best Practices for Reducing Exposure to Carcinogens

Cancer may never be eliminated from the fire service, but it's clear that steps can be taken to reduce the number of fire fighters being diagnosed and dying every year. Healthy In, Healthy Out is a comprehensive guide on the current best practices to reduce exposures to the carcinogens that fire fighters face every day. Using the Incident Management System, this presentation, developed by members of the Washington State Council of Fire Fighters and the Kent (WA) Fire Department, will address the five areas of IMS/ICS: Command, Planning, Logistics, Finance and Operations.

The Future of Health Care Regulations

This session will explore the future of health care regulations. The health care environment is heavily regulated and continuously evolving. As Medicare/Medicaid reimbursement changes, the conditions of participation change and are continuously updated to reflect new interpretations of NFPA 101, *Life Safety Code*, and NFPA 99, *Health Care Facilities Code*. The NFPA Health Care Section continuously monitors NFPA Codes and Standards to identify any changes in the standards that may impact health care facilities in the future as AHJs and accreditation organizations adopt them.

Conveyor Belts: Fire Hazards and Protection

Conveyors are used in almost all industries; having an adequate fire protection system in place can minimize the loss sustained during a fire event and maintain business continuity. This session will present the fire hazards of conveyors and testing history, as well as the results of the current large scale fire test series. The fire test series examined the effects of sprinkler spacing, type of sprinkler system (wet or dry pipe), and incline of the conveyor. The session will also cover how the results could potentially impact fire protection guidance and regulations for conveyors.

Integrated System Testing — The Value People Assume They Already Have

Individually, fire protection and life safety systems provide valuable tools, yet no single system can ensure safe occupant egress and allow first responders to effectively do their jobs in an emergency situation. Rather, these systems depend on each other to achieve the overall goal of life safety. The value of the systems is greatly diminished if they are not tested to confirm the "handshake" between them. This session will provide an overview of NFPA 4, Standard for Integrated System Testing of Fire Protection and Life Safety Systems, including its purpose and what attendees need to know now that the standard is referenced in the latest edition of building and fire codes.

NFPA 13-2019, Standard for the Installation of Sprinkler Systems: A New Format for the Standard That Started It All

The 2019 edition of NFPA 13 is reorganized and reformatted. This session will review the new structure, including the reasoning behind the changes. Special emphasis will be given to the protection of storage commodities. Attendees will also hear an overview of major technical changes and their impact on fire sprinkler system layout and installation.

Measuring Mitigation: The New Firewise Portal and What It Tells Us about Wildfire Risk Reduction

In July 2017, NFPA's Wildfire Division launched the Firewise Online Management Portal to support the Firewise USA program with two goals in mind: 1. Creating a system that will help Firewise sites better manage and organize their own programs, and 2. Allowing the program to capture better data on risk-reduction efforts across Firewise sites. This presentation will explain how the portal was built, discuss the 2017 results, and outline the goals for the future.



TUESDAY, JUNE 12 CONT.

11:00 AM - 12:00 / 12:30 PM

NFPA 72-2019, National Fire Alarm and Signaling Code — Proposed Changes: Panel Discussion, Part 1

The 2019 edition of NFPA 72, *National Fire Alarm and Signaling Code*, is up for adoption. In this first of two panel discussions moderated by the chair of the NFPA 72 Correlating Committee, attendees will hear Technical Committee chairs review some of the significant proposed changes approved by their Committees.

Active Shooter / Hostile Event Response and NFPA 3000™ Program: Lessons Learned and a New Standard

This panel of experts will explain the events that led to the creation of NFPA 3000™, *Standard for Preparedness and Response to Active Shooter and/or Hostile Events* — including lessons learned from the specific events with which they were involved. The discussion will include an explanation of how the Technical Committee was formed, an overview to the content of the standard, and discussion of the roles and responsibilities of those who will be implementing it.

Using R-290 (Propane) in Commercial Refrigeration Applications: Hazards and Mitigation Measures

Hydrocarbons, including R-290 (propane), are viable refrigerant working fluids with zero ozone-depleting potential and minimal global warming potential. The current barrier to more widespread use of A3 refrigerants is their flammability; regulations permit use of A3 refrigerants with limited charge sizes. This session will discuss a study evaluating the flammability hazard of R-290 in refrigeration appliances in commercial retail and kitchen settings to: (1) assess the flammability risk versus charge size; and (2) develop recommendations preventing or mitigating those risks. The study is considered a step toward establishing a technical basis for re-evaluating current charge limits and determining whether A3 refrigerants can be used in applications that require larger charges than currently allowed.

A Little Help From Your Friends: Lessons Learned from Wildfire Engagement Campaigns from Around the World

This panel of wildfire experts from around the world will explore lessons learned from community-wide wildfire engagement campaigns in the United States, Canada, Spain, and Australia. Attendees will hear about campaign activities, shared resources, and strategies to gain resident involvement.

Next Generation Smart and Connected Fire Fighter Systems

Through funding from the National Science Foundation, researchers from the University of New Mexico are working to enable novel software and hardware advancements that will have clear positive impact for the fire service. Attendees will hear an update of the two-year project, the goal of which is to make fundamental technical and algorithmic advances within the context of connected and smart cyber fire fighting. The project includes a fireground PAN/LAN data communication system; fireground sound discrimination (e.g., PASS device or “Mayday”); prediction of fire fighter exhaustion through speech features; human/object/event recognition with thermal imaging; and navigational image search techniques.

The Centers for Medicare & Medicaid (CMS) Update

This session will review recent CMS regulatory changes and how they impact health care occupancies. Since adopting the 2012 edition of NFPA 101, *Life Safety Code*, in 2016, CMS has developed new survey forms, surveyor guidance, and other information. Those will be discussed along with new requirements and issues such as emergency preparedness and changes to the Long Term Care physical environment requirements.

Where's the Valve? Who has the Wrench? Training to Respond to Sprinkler Activations

Following several sprinkler activations that each lasted longer than needed and caused damage to buildings and their contents, the Smithsonian Fire Protection and Operations staff developed a training program to ensure personnel are able to react quickly to sprinkler activations. Lessons on working with the Fire Department and Fire Marshal will also be shared.

2018 SESSIONS

TUESDAY, JUNE 12 CONT.

11:00 AM - 12:00 / 12:30 PM

The Critical Role of the NEC®: Back to the Future

NFPA 70, National Electrical Code, has been the cornerstone of the electrical industry for over 120 years. While the NEC Correlating Committee recognizes that the code has to be reactive to trends in the electrical industry, it also recognizes that, working together with the electrical industry, it can be proactive as well. The goal of the code is safe and sound growth of emerging areas. This panel presentation will focus on the advantages of adopting the current edition, point to some of the new areas under consideration for the 2020 edition and beyond, and discuss the significant challenges created for owners, designers, installers, and enforcement where the latest edition is not adopted in a timely manner.

Making Community Risk Reduction Programs Current and Relevant

Although the fire service has more data and research findings at its disposal than ever before, the information is primarily being used to address operational, training, and deployment plans — all of which are reactive measures. These same data and research findings could be used to update our CRR programs, which is the proactive side of emergency services. These updates coupled with the use of improved local data collection and analysis have the potential to make CRR programs not only current but relevant.

Assessing Fire Risk in High-Rise Buildings with Combustible Insulation: A New Tool for the Enforcement Community

In the wake of recent fires in high-rise buildings clad with combustible wall configurations and systems, global enforcement authorities are reassessing the level of risk in their jurisdictions. In response, NFPA has developed a fire risk assessment methodology to help them do so. This presentation will include a review of the global regulatory context and the technical risk factors inherent in high-rise buildings clad with these systems. It will also outline the methodology to assess relative level of risk and provide examples of its application. An inventory of best practices for short-, medium-, and long-term mitigation will be provided.

2:00 PM - 3:00 PM

Hospitality Industry Design Challenge: Meeting Corporate Standards and Satisfying Local AHJs

Following a global trend, the hospitality industry in Asia has expanded rapidly. Most hotels have global corporate fire and life safety standards, many developed in accordance with NFPA standards. However, design teams need to understand local codes and practices as well, as these can play a significant role in obtaining final approval by the AHJ. Case studies will be used to illustrate potential challenges and solutions.

NFPA 72-2019, National Fire Alarm and Signaling Code: Changes for Fire Service Access Elevators and Occupant Evacuation Elevators

NFPA 72 includes specific code requirements for fire service access elevators (FSAEs) and for occupant evacuation elevators (OEEs). These requirements, first included in the 2010 edition to be aligned with requirements in the 2009 IBC, were slightly modified in the 2013 and the 2016 editions. However, as these elevators are becoming more common, the NFPA 72 SIG-PRO Committee appointed two task groups to modify the requirements further. This session will discuss their work and the resulting major changes anticipated in the 2019 edition.



TUESDAY, JUNE 12 CONT.

2:00 PM - 3:00 PM

Power System Failure Due to Natural Disaster: Lessons Learned

This case study, presented by Toyota electrical engineers, will detail lessons learned from a power system failure that resulted from a natural disaster. Included will be discussion of potential countermeasures for future incidents.

NFPA Data Solutions Portal

Learn how to access and make effective use of the incredible suite of resources available via NFPA's Data Solutions Portal, including maps of national fire incidents, tools to evaluate property risks and losses due to fire, methods to compare fire departments, and dashboards to visualize and analyze fire data.

PTSD in the Fire Service, A Personal Journey

This session will examine post-traumatic stress disorder (PTSD) and other behavioral health emergencies in the fire service. The presenter will share the story of his own personal battle with — and recovery from — PTSD, including his journey to the IAFF Center of Excellence for Behavioral Health Treatment and Recovery. The intent is to help break down the stigma associated with behavioral health in the fire service and encourage fire service personnel to know when to ask for help.

Carvana: Performance-Based Design of an Automated Vehicle Storage and Retrieval System

Carvana's glass "Car Delivery Tower" is part of an automated storage and retrieval system that displays and delivers passenger vehicles to customers. The unique structure of the Tower (currently being built in 12 North American cities) is not well addressed by building and fire codes and prescriptive fire protection schemes/approaches. This Case Study compares the fire hazard presented by the Tower's storage configuration to known and codified occupancies, and then extrapolates the required methods of protection and hazards experienced to create a unique and specific protection scheme.

Modeling of Flammable Releases in Industrial Facilities

The production, storage, and use of flammable liquids and gases in industrial facilities pose a number of potential loss of containment hazards, including pool fires, jet fires, flash fires, fire balls, and explosions. To determine the risk, it is necessary to model the consequence severity. This session will describe the evolution of flammable releases in industrial facilities and help engineers and AHJs understand how flammable release consequences are modeled. Among the topics addressed via case studies will be the basic features and best practices associated with various consequence evaluation methods, including their assumptions and limitations, and the use of passive mitigation to lower the severity of the consequences.

Reliability-Based Inspection, Testing, and Maintenance Planning

Many NFPA codes and standards specify the minimum requirements for periodic inspection, testing, and maintenance (ITM) of fire protection systems, but the need for a more data-based approach to ITM frequencies is growing as NFPA develops new documents that involve integrated systems (e.g., NFPA 4). There is a need for additional work to be done to evaluate and correlate reliability with code requirements. This session will address related key issues, including establishing a data framework that standardizes the data collection format, submission process, data security parameters, and data analysis procedures.

Equivalent Protection Schemes for Fire Sprinkler Systems — The Role of Efficient and Effective Fire Testing

Although NFPA codes and standards address the protection of many types of occupancies and storage arrangements, there are cases where none of the provided options fits exactly. In such cases, a code or standard may provide for the use of equivalent protection schemes, with the approval of the authority having jurisdiction. Most AHJs require technical documentation to support the equivalent schemes. For fire sprinkler applications, full-scale fire testing is often the most successful method to prove equivalency. However, full tests are expensive and require technical expertise to develop and manage. This session discusses the benefits of fire tests and the steps for developing an efficient test program. In addition, attendees will learn the process by which the technical documentation is applied in revising the applicable standards and codes.

SESSIONS

TUESDAY, JUNE 12 CONT.

2:00 PM - 3:00 PM

Transforming Wildland Fire Policy — Utah's Success Story

Following Utah's record-setting catastrophic 2012 fire season, the Utah Division of Forestry, Fire and State Lands began overhauling its Wildland Fire Program. The Governor's Catastrophic Wildfire Reduction Strategy (Utah's approach to the National Cohesive Strategy), the creation of a new wildfire management system, the Utah Wildfire Risk Assessment Portal (on-line risk assessment tool), and the millions of dollars of funding to meet the three goals of the NCS are all factors that have helped Utah create a progressive wildfire policy and fire management system that emphasizes fire risk reduction in partnership with communities. Attendees will learn about the philosophical shift Utah has undertaken; the numerous policy, administrative, organizational, and statutory changes that have been made; and the consensus-building approach with cities, counties, and fire chiefs, all to build a comprehensive, statewide system focused on proactive wildfire risk reduction and, over time, systematically reducing the threat and cost of wildfire across the state.

3:30 PM - 4:30 / 5:00 PM

Fire Resilience — A New Approach to Building Design

When designing for fire safety, occupant safety has typically been the primary consideration. However, given the growing concerns of population growth, urbanization, resource scarcity, and destabilizing geopolitical and climate events, fire damage to buildings will likely gain greater attention. This session will discuss current approaches to fire resistance (as opposed to fire resilience) design, global trends influencing building stock, and performance expectations for buildings in fires, and make a case for shifting the focus of fire resistance design to promote the design, construction, and management of increasingly fire-resilient buildings.

Power Over the Ethernet: A New Frontier

The infrastructure for low powered data (Ethernet) regulated by the NEC and other codes and standards is changing. Whereas previously the cables used were only operating at very low power levels, this same cable infrastructure is now being used to supply power for IP phones, security cameras, lighting, PLC controllers, mass notification, kiosk/annunciation, charging of electronic devices, and other applications. In many installations, these cables are bundled together in large bundles, which may result in overheating. In the past, advances in fire-resistant insulation have significantly reduced the number of fires in signaling circuit cables, though the proliferation of new applications with increasing power demand is raising questions on overheating and fire risk.

Bleeding Control in 2018: The National "Stop-the-Bleed" Initiative

This presentation will tie together the federally supported STOP THE BLEED campaign to reduce preventable death from bleeding with standards that can support the education, preparedness, and equipment needed to respond to emergencies. The presenters will discuss the lessons learned from a range of incidents where immediate responders were challenged to prevent death from bleeding. A scientific evidence-based approach to hemorrhage control presenting the proper techniques and equipment required to be pre-staged ahead of an event will be discussed, as will the education framework required to train the public in STOP THE BLEED.



TUESDAY, JUNE 12 CONT.

3:30 PM - 4:30 / 5:00 PM

What's the Deal with All This Data Stuff?

The drum beat about the importance of “data” has been getting louder over the past few years. This panel will delve into many of the questions that tend to arise with presentations about the power of data, such as: who or what created that data you’re using and how confident in its accuracy are we? Behind every cool data tool seems to be a bunch of people staring at their own spreadsheets scratching their heads: How do we get from here to there? What sort of unintended consequences of data-driven decision-making should we be aware of? What sort of role could data begin to play in our standards development process? While much of the recent focus has been on the use of data within the public sector the panel participants represent a cross section of industries trying to leverage data to make the built environment safer.

The Worst Plant in the World — A Virtual Health and Safety Audit

This highly interactive session takes attendees through a photographic audit of “the worst plant in the world.” Using photographs of regulatory compliance issues noted during many years of audits and assessments, the presenter will quiz attendees on the various issues noted and the applicable OSHA regulations and NFPA standards, providing case histories and soliciting group discussion. Topics addressed via case histories will include confined space entry, combustible dust, fire prevention plans, fire suppression systems and equipment, process safety management, and welding, cutting, and brazing/hot work, among others.

NFPA 13-2019, Standard for the Installation of Sprinkler Systems

This presentation will summarize significant technical changes and provide an outline of the new format in the next edition of NFPA 13, *Standard for the Installation of Sprinkler Systems*. We will also discuss some of the proposed changes that were not accepted and the technical reasons for changes accepted.

Community Risk Reduction: Out of the Standard and Into Your Neighborhood

This session will emphasize the importance and effectiveness of community risk reduction (CRR). It will include a discussion of NFPA’s CRR resources, including a brief overview of the proposed NFPA 1300, *Standard on Community Risk Assessment and Community Risk Reduction Plan Development*. Case studies will examine how a range of communities have incorporated methodologies from the standard into their CRR initiatives, helping attendees understand how they can bring CRR into their own communities.

The eVTOL Revolution: How the Next Generation of Air Travel will Impact Fire and Life Safety

This panel discussion will examine the next generation of air transportation: eVTOL/ODM or Electric Vertical Takeoff and Landing On-Demand. This new technology is rapidly moving from science fiction to science fact; dozens of companies are working to make VTOLs a reality. This rapid development means fast-approaching challenges and changes for all fire safety professionals. The required infrastructure for this technology including electrical grid expansion, airborne battery systems, and ground-based charging stations will result in a need to evaluate both active and passive fire protection, life safety, and first responder training and tactics.

Fire Inspector Certification — Why?

This session will focus on certifications for Fire Inspectors and AHJs, showcasing NFPA’s CFI and CFPE programs. With the ever-changing and continually complex Codes to enforce, how does the Inspector keep afloat? Presenters will provide samples of the current programs and discuss several tragic fires that could have been avoided with proper inspection and enforcement. The discussion will focus on the need to be competent as an Inspector, and will include a Q&A session with a Fire Captain.

2018 SESSIONS

WEDNESDAY, JUNE 13

8:00 AM - 9:00 AM

Community Risk Reduction Data: The Next Frontier

This presentation will detail NFPA's grant-funded efforts to expand the popular conception of fire data from just emergency incidents to all fire service activities. In particular, it will address one of the most commonly collected but inconsistently formatted types of records — community risk reduction activities. Topics will include the different types of CRR data; how CRR data fits into the National Fire Data System NFPA is building; and the technical challenges of consolidating data. Attendees will also learn how they can begin to leverage NFPA's work as they focus CRR outreach activities and document the outcome and impact of those activities.

Roles and Responsibilities: Determine Who's Responsible for What to Achieve Effective Fire Protection

Effective fire protection is best achieved when engineers, engineering technicians, and authorities having jurisdiction (AHJs) work together. Competent professionals who can communicate well with each other during the rapid construction process can create an environment with the best protection schemes for owners and public. Attendees will learn what the ideal roles involve, ways to identify qualified professionals to fill those roles, and the benefits of following model guidelines.

Fire Test Standards for Exterior Wall Assemblies

Exterior wall assemblies are used to increase energy efficiency and enhance building aesthetics. These assemblies can be combustible and include sandwich panels, and metal composites, among others. Various fire test standards are used worldwide to ascertain the performance of exterior wall assemblies per respective national building codes; the FM Global fire testing protocols are described within the ANSI FM 4880/4881 standards. This presentation will highlight the FM Global protocols and note differences among the standards. The session will also address recent research to further enhance the scope of building materials tested per ANSI FM 4880/4881 and the approval procedure.

Electrical Safety — A Shared Responsibility

This presentation provides a concise look at electrical safety in the workplace and more specifically the roles of both electrical contractors (employers) and electrical workers (employees), and what they can do to comply with the requirements of NFPA 70E, *Standard for Electrical Safety in the Workplace*.

Audio Distribution: Mass Notification and Its Impact on Safety

The Audio Distribution industry has grown exponentially in recent years due to open-office design trends. However, with the recent adoptions of NFPA 72, *National Fire Alarm and Signaling Code*, and the development of UL 2572 certification of Mass Notification systems, Audio Distribution has become a potential life safety concern. This presentation will discuss the basic premise of audio distribution and the changes in NFPA and UL requirements.

Should We Stay or Should We Go? Evacuation Decision-Making for Health Care Facilities

In 2017, hurricanes in Texas and Florida once again brought to light the difficult decision-making process health care facilities face regarding evacuation during a natural disaster. This session will explore criteria to be considered when making evacuation decisions. Case studies of two health care facilities that responded differently in the wake of similar disasters will be compared and contrasted.

Total Cost of Fire in the United States

This session will report on the total cost of fire — all net expenditure on fire protection and all net losses due to fire incidents — in the United States for the years 1980 to 2014. For 2014, the total is \$328.5 billion — 1.9% of the U.S. Gross Domestic Product (GDP). The expenditures constitute \$273.1 billion (83.1% of total) and the losses constitute \$55.4 billion (16.9% of total). The fire safety costs in building construction is the largest component at \$57.4 billion (17.5% of total). This report provides updated prevention, protection, and mitigation costs, and accounts for indirect losses, specifically from high loss incidents.



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Storage Protection in the Presence of Horizontal Barriers or Solid Shelving

The requirements of NFPA 13, *Standard for the Installation of Sprinkler Systems*, for the protection of horizontal barriers and solid shelves within rack storage arrays have long puzzled designers and user groups alike. This presentation will review the findings of a newly completed horizontal barrier/solid shelf research project sponsored by the Fire Protection Research Foundation. The basis for relevant NFPA 13 sprinkler protection requirements will be reviewed, as will both legacy and current fire testing. In addition, recommendations for future fire testing will be presented.

Post-Fire Investigations in the Wildland Urban Interface — Confirming That Defensive Actions Save Structures

Historically, post-fire WUI data collections have focused on the damaged and destroyed homes, with little emphasis on quantifying fire and ember exposures and the effects of defensive actions on WUI structures. The National Institute of Standards and Technology (NIST) has developed a new methodology for collecting and analyzing WUI data. Attendees will learn how the analysis of data from investigations in California, Texas, and Colorado indicated that defensive actions and fire and ember exposures played a significant role in the survivability of structures during WUI fires.

9:30 AM - 10:30 AM

Fire Prevention and Community Risk Reduction within Multiple Populations: A University Case Study

This case study will discuss useful strategies to address communities with multiple populations, such as seen in universities. Emory University Fire Safety works with federal, state, and local authorities to address risk reduction strategies on and off campus between the public, staff, student, and faculty populations. The presenters will discuss development of the Fire Safety Training and Safety Captain Program using NFPA 101, *Life Safety Code*, and NFPA 1600, *Standard on Disaster/Emergency Management and Business Continuity Programs*.

Exterior Wall Flammability — A Growing Global Concern

Fire performance of exterior wall construction has recently come under increased scrutiny. Regulation changes, recent fire events, demand for energy-efficient (green) construction, and plans for new tall wood building construction have continued to drive related discussion and debate. To better understand the exterior wall flammability issue, and move towards solutions, this presentation will discuss the factors that influence building construction, provide an overview of various exterior wall test methods used around the world, and provide an update on UL research on full-scale building experiments on fire performance of facades. The discussion will also address challenges of assessing existing buildings and how UL's certification approach is meeting the need for a viable method of determining Code compliance.

Energy Storage Systems (ESS): Fire Safety Concepts

This session will focus on fire safety concepts under consideration for new fire codes and the draft NFPA 855, *Standards for the Installation of Stationary Energy Storage Systems*. These concepts build on the initial fire safety concepts introduced into the 2018 codes, and more effectively reflect the types of ESS installations being deployed today.

2018 SESSIONS

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9:30 AM - 10:30 AM

Fire Inspections for Business Continuity in Higher Education

This session will demonstrate how higher education fire prevention programs can use NFPA 1600 and NFPA 1 together to reduce fire risk using the concept of Business Continuity. We will apply the concepts of NFPA 1600 to evaluate risks on campus and create a fire prevention plan that prioritizes inspections and identifies gaps that impact the ability of an institution to continue operations after an incident.

Remote Inspection: Experience from the United Arab Emirates (UAE)

Remote Commissioning is a practice developed and adopted by Abu Dhabi Civil Defense and the subject of a proposed chapter in the new UAE Fire and Life Safety Code. The requirements address the need to provide an audiovisual record/animation of the fire safety systems testing and commissioning process to support all written documentation, and to expedite final inspections by reducing the time the AHJ must be on site.

Unlucky 13: Large-Loss Assembly Fires

The December 2016 fire at the “Ghost Ship” warehouse/dance-party/artist-collective in Oakland, CA, which killed 36 people, brought to light an unsettling trend: large numbers of occupants are dying in catastrophic assembly venue fires in the U.S. every 13 years, dating back to the 1977 Beverly Hills Supper Club fire. This presentation will review the fires and the resulting code changes, and ask an important question: Are these “one-off” fires every 13 years acceptable, or does the fire protection and life safety community need to do more to prevent them?

Hurricanes, Floods, and Other Natural Disasters — Getting Healthcare Organizations Back to Normal

This session will examine hospitals and nursing care facilities affected by recent natural disasters, including how review of emergency plans during regular survey cycles helped to mitigate physical damage. NFPA 101, NFPA 25, and NFPA 110 requirements that led to success will be discussed. Also addressed will be how the insurance industry worked with the facilities to file claims and restore operations, noting lessons learned to better prepare for future events.

Developing Fire Protection Requirements for Cartoned Plastic Aerosol Containers

FM Global and the Plastic Aerosol Research Group (PARG) of the Consumer Specialty Products Association (CSPA) partnered to assess the fire hazard and protection requirements of plastic aerosol containers. The goal of the multi-year effort was to understand the hazard difference between metal aerosol containers — the basis for existing requirements — and plastic aerosol containers. A series of single-can, two-case, and full-scale fire tests ultimately defined different hazard levels for plastic aerosol products and the required fire protection for them. This session will provide an overview of the work, the results of which are being incorporated into NFPA 30B, Code for the Manufacture and Storage of Aerosol Products, and FM Global Data Sheet 7-3.

The Effect of Obstructed Ceiling Construction on Automatic Sprinkler Protection

Industrial facilities with obstructed ceiling construction are found worldwide. Current ceiling sprinkler installation guidelines for such construction are not fully supported by test data or modeling analysis. Therefore, a numerical modeling study was conducted to investigate principal effects of obstructed construction on suppression performance and the results were used to develop a fire testing plan. Attendees will hear about dynamics affecting fire suppression in the presence of obstructed ceiling construction, design elements impacting fire suppression, and factors affecting suppression for obstructed ceilings.



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9:30 AM - 10:30 AM

Advances in Wildland Fire Shelter Development and Testing

Attendees will learn about a NC State University research project that has provided advanced fire shelter materials options, as well as an enhanced technical basis for evaluating fire shelter materials alternatives. The project developed advanced wildland fire shelters that used novel heat-resistant fabric technologies to improve protective insulation and compared the performance of the advanced prototypes with the currently used shelter in lab tests and in prescribed burns.

11:00 AM - 12:00 / 12:30 PM

Health Care Electrical Systems — Essential and Emergency

NFPA 99, *Health Care Facilities Code*, requires hospitals and other health care facilities have electrical systems that support patient care and essential facility operation. NFPA 101, *Life Safety Code*, requires facilities be provided electrical systems that are essential for human life safety when normal power is interrupted. This session will discuss when these systems are required, why they are required, and how they differ by comparing requirements for essential systems in NFPA 99 and NFPA 70, National Electrical Code, Articles 517, Health Care Facilities, and 700, Emergency Systems.

NFPA 72-2019, National Fire Alarm and Signaling Code — Proposed Changes: Panel Discussion, Part 2

The 2019 edition of NFPA 72, *National Fire Alarm and Signaling Code*, is up for adoption. In this second of two panel discussions moderated by the chair of the NFPA 72 Correlating Committee, attendees will hear Technical Committee chairs review some of the significant proposed changes approved by their Committees.

Hot Work Safety

According to NFPA's 2016 report, "Structure Fires Started by Hot Work," U.S. fire departments responded to an annual average of 4,440 structure fires involving hot work between 2010 and 2014, resulting in an average of 12 civilian deaths, 208 civilian injuries, and \$287 million in direct property damage each year. Meanwhile, NFPA 51B, *Standard for Fire Prevention During Welding, Cutting, and Other Hot Work*, covers the provisions to prevent injury, loss of life, and loss of property from fire or explosion as a result of hot work and has been available since the 1960s. The purpose of this program is to understand the various types of hot work, identify the hot work safety team, and recognize when a hot work permit and/or fire watch is required.

Portable Fuel Containers — Understanding and Preventing the Hazards

As of December 1, 2016, CPSC is aware of 187 consumer product incidents, 188 injuries, and 21 deaths to which flame jetting may have contributed. CPSC staff believes that effective FMDs on fuel containers can reduce the likelihood of occurrence of flame jetting. CPSC staff is pursuing a number of efforts to mitigate this hazard, including sponsoring research on FMDs for disposable fuel containers and collaborating with stakeholders to develop new voluntary standards requirements for portable fuel containers and disposable fuel containers to include FMDs. CPSC staff will describe the phenomena, including pictures and videos of actual flame jetting events. Staff will also summarize the science behind prevention of flame jetting and will share the technical solutions that CPSC and ASTM are working on to mitigate the hazard in portable fuel containers and disposable fuel containers.

Life Safety Commissioning and Integrated Testing on Gigantic International Projects

This session will use case studies to examine commissioning and integrated testing of fire protection and life safety systems for extremely large (some buildings are >12 million ft²) mixed-use projects. The focus will be on the unique challenges posed by conflicting regulations, local installation materials, practices, terminology, phasing of the construction, and system implementation, along with language barriers. In addition, an introduction to standardized terminology will be provided, as will an overview of common misconceptions.

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11:00 AM - 12:00 / 12:30 PM

NFPA 101-2018, Life Safety Code: Changes

The 2018 edition of NFPA 101, Life Safety Code, was issued in August 2017. This session will provide an overview of the significant changes from the 2015 edition, including additions to the scope; new occupant load factors for business use; testing requirements for integrated fire protection and life safety systems; new larger hospital smoke compartment criteria; and others. The session will also address key topics raised by the Correlating Committee for consideration in the next revision cycle.

Emerging Technologies and the Interconnectivity of Codes & Standards

With the convergence of evolving technologies and the IoT (Internet of Things), it can be challenging to keep up to date on all the various related codes and standards (NFPA, ICC, BICSI, TIA, and IEEE) and how they interconnect. This presentation will give an overview of what is going on within the fire alarm industry and take a broader look at what is going on in the world of emerging technologies.

Understanding Facility Water Supplies and Maintaining a Reliable and Adequate Source

In some facilities, devices being added to water supply systems in recent years are creating a potential for deterioration that could affect sprinkler system adequacy and reliability. This session will explain the potential downfalls of these devices as well as how to evaluate such systems to ensure adequate and reliable water supplies.

Leveraging Data to Engage At-Risk Communities Around the World

This panel discussion will provide an international perspective on wildfire advocacy efforts and the use of data to identify and address community risk reduction needs, foster local government involvement, and engage insurance agencies. Attendees will hear from the Manager of Community Engagement with Australia's New South Wales Rural Fire Service; the General Manager of the Pau Costa Foundation in Spain; and the Manager of the NFPA Wildfire Division.

2:00 PM - 3:00 PM

Test Your Code Knowledge: NFPA 101, Life Safety Code

This interactive session will allow attendees to use live polling to indicate their level of NFPA 101 knowledge. The presenter will use the poll results to determine which subjects will be addressed and to what extent.

Fire in a Podium Building under Construction: A Case Study

The Fuse 47 Building in College Park, MD was a 7-story Type I and Type III podium-style building a few months from occupancy when a 5-alarm fire destroyed it. Unlike many fires that have occurred in these types of buildings, a sustained interior attack ensued and the fire was eventually stepped at a large trench cut — despite issues encountered with the construction, water supply, and standpipe systems. This session will identify the challenges fire fighters faced during the operation and the aspects of the building that either helped or hampered their efforts. Code-related aspects include both lessons re-learned from provisions currently in NFPA 241, Standard for Safeguarding Construction, Alteration, and Demolition Operations, and suggestions for improving the standard.

Fire Safety and Brand Value — Understanding and Managing the Relationship

The purpose of this panel discussion is to exchange information on the motivations, successes, challenges, and lessons learned from companies who set and maintain their own minimum level of safety across the globe. At a recent NFPA workshop, organizations shared their experiences and identified ways to drive improved practice around fire and life safety compliance and enforcement to create safer communities around the world.



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2:00 PM - 3:00 PM

Jezan Hospital: Case Study of a Deadly Fire

On Dec 24, 2015, a fire that started in the nursery of Saudi Arabia's Jazan General Hospital left 25 dead and many more injured — making it the deadliest fire at a health care facility in Saudi history. Attendees will hear from the Director General of Safety and Security at the Saudi Ministry of Health as he uses video coverage, site photos, and design drawings in a review of contributing factors such as hospital design, construction, and maintenance, as well as the role that executives' decisions, staff training and reaction, and even emergency response all played.

The Changing Face of Refrigerants — How the Move Toward Flammable Refrigerants Affects You

Regulatory actions, focused on promoting environmental sustainability, are driving the Air Conditioning and Refrigeration (ACR) industry toward the use of lower Global Warming Potential (GWP) refrigerants — many of which are flammable. This session will provide an overview of the dynamics shaping the changing refrigerant landscape. Areas of focus will include regulatory drivers, an overview of the changing refrigerant options, a discussion of flammability parameters and refrigerant safety classes, changes to tools and service procedures, and a brief summary of ongoing codes and standards activities related to flammable refrigerants.

Modeling Urban Evacuation from Wildfire

Planning and management of WUI evacuations require information on wildfire, pedestrian movement, and vehicle traffic components. Simulation models of those components are crucial to ensuring that such planning and management are effective. This panel session will address both current model capabilities and proposed systems.

NFPA 13-2019: A Case Study for the Reorganization of a Major NFPA Standard

This case study examines the reorganization of NFPA 13, *Standard for Installation of Sprinkler Systems*, for the 2019 edition. The presenters include the Correlating Committee chair, the NFPA staff liaisons, and the chair of the reformatting task group. After a brief overview of the new format, the presenters will discuss the rationale for the reorganization, explain the process used, and discuss the challenges of reformatting the standard and incorporating hundreds of public inputs while ensuring that no technical changes inadvertently occurred or were deleted. Finally, the presenters will discuss the correlation and technical issues that were identified and addressed.

3:30 PM - 5:00 PM

Fire and Life Safety for Large Festivals

This panel discussion will provide an overview of fire and life safety issues at large outdoor festivals. The panel will include the Fire Marshal for the Coachella and Stage Coach music festivals, key staff from the Burning Man festival, and experts in stage pyrotechnics and outdoor firework displays. In addition to sharing what's involved in planning, inspecting, and resolving safety concerns at such events, the panel will also address how the lessons learned from these large festivals can be applied to smaller events.

2018 SESSIONS

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3:30 PM - 5:00 PM

NFPA Codes and Standards — An International Perspective

NFPA codes and standards have long served as the benchmark in the United States for fire, electrical, and related hazards. However, the reach of NFPA is quickly expanding worldwide. This panel discussion examines the current use of NFPA codes and standards internationally as well as the challenges in meeting the needs of the global fire and life safety market. The presenters—the NFPA VP of Operations and members of the NFPA Board of Directors—will discuss how Technical Committees are adjusting their approach to the development process to address international needs as well as the challenges of translating technical content, addressing cultural differences regarding fire and life safety, and training and effective enforcement where jurisdictional infrastructure is in its infancy.

NFPA 70-2020, *National Electrical Code*, Proposed Changes: A Look at the First Draft Meeting

Attendees will get a “sneak peak” at some of the major recommended changes to the 2020 *National Electrical Code* (NEC) that resulted from the First Draft meeting.

Safeguarding Construction, Alteration, and Demolition Operations

This panel discussion will incorporate lessons learned from recent large loss fires experienced in the final stages of construction. The panelists will discuss areas of improvement in safeguarding during construction and adherence to NFPA 241, *Standard for Safeguarding Construction, Alteration, and Demolition Operations*, as applied to the case studies presented.