**SOCIETY of FIRE PROTECTION ENGINEERS**
***Southern California Chapter***

**www.sfpeSoCal.org**

# 2020 FIRE PROTECTION ENGINEERING SYMPOSIUM

## *A FOUR-SESSION, VIRTUAL SYMPOSIUM*

**October 15, 2020 – November 5, 2020**
**9:00am – 10:30am PST**

Presentations to be delivered via Microsoft Teams

The Southern California Chapter of SFPE is hosting the 2020 Fire Protection Engineering Symposium. Invited speakers who are recognized experts will present hot topics in the fire protection industry. Proceeds benefit the Chapter Scholarship Fund which awards scholarships to students attending the Fire Protection Engineering Program at Cal Poly San Luis Obispo.

## AGENDA

### Session I: Thursday, October 15, 2020 from 9:00am – 10:30am PST

i. **Cal Poly Fire Protection Engineering Program Update**, *Dr. Richard Emberley, Cal Poly SLO*

ii. **Cyber Security for Fire Protection Systems**, *Victoria Hutchison, Fire Protection Research Foundation*

### Session II: Thursday, October 22, 2020 from 9:00am – 10:30am PST

i. **ERRCS/BDA Basics – The New Wild West**, *Jay Levy, Saf-Com Supply, Inc.*

ii. **The 2019 California Fire Code and NFPA 4, Standard for Integrated Fire Protection and Life-Safety System Testing**, *Timothy Lawyer, Jensen Hughes*

### Session III: Thursday, October 29, 2020 from 9:00am – 10:30am PST

i. **Impact of Code Compliance**, *Robert Rowe, PyroCop, Inc.*

ii. **Oxygen Depletion Systems in Warehouses**, *Kevin Scott, KH Scott & Associates LLC*

### Session IV: Thursday, November 5, 2020 from 9:00am – 10:30am PST

i. **California State Fire Marshal's Programs Update**, *Chief Mike Richwine, State Fire Marshal*

ii. **Energy Storage Systems**, *Ray Bizal, NFPA*

# PRESENTATION DESCRIPTIONS AND PRESENTERS' BIOGRAPHIES

## Cal Poly Fire Protection Engineering Program Update

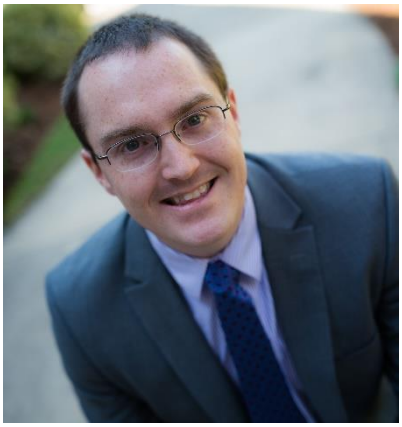
*– Richard Emberley, Ph.D.*

The Fire Protection Engineering (FPE) program (fpe.calpoly.edu) at California Polytechnic State University (Cal Poly) in San Luis Obispo, CA celebrated in 2020 its 10th year of offering Master of Science (MS) degree and Graduate Certificate programs. Cal Poly is one of three universities in the United States that offers a MS degree in FPE but is the only FPE program located west of the Appalachian Mountains. Over its 10-year history, the FPE program at Cal Poly has awarded more than 110 MS degrees and numerous Graduate Certificates. The Cal Poly FPE program has always offered its courses both on-campus and online, so the COVID-19 pandemic has had little impact on program delivery.

This presentation will provide an update on academic and research activities being conducted by the FPE faculty and students at Cal Poly and provide information about the MS degree and Graduate Certificate programs. The update will highlight the FPE faculty's work on the establishment of the Cal Poly WUI FIRE Institute which has aims to be a university wide institute that is a leading source on fire science and engineering, information and intelligence, research, and education all pertaining to wildland-urbane interface (WUI) fires.

## Richard Emberley, Ph.D.

*California Polytechnic State University - San Luis Obispo*



Richard Emberley is an assistant professor in the Mechanical Engineering Department and Fire Protection Engineering Program at California Polytechnic State University (Cal Poly). Richard completed his PhD under the supervision of Professor Jose L. Torero at the University of Queensland in Brisbane, Australia in early 2017. Richard holds two MS degrees in Civil and Fire Protection Engineering from Worcester Polytechnic Institute as well as a BS in Civil Engineering with a focus on Structural Engineering. His research focuses in the areas of fire safety engineering, structural mechanics, combustion, and heat transfer among other areas. His PhD research focused on structural debonding of cross-laminated timber under fire conditions as well as self-extinction of timber and the fundamentals for designing tall timber buildings for fire exposure. Richard has extensively published and presented academic papers in *Engineering Structures, Fire Safety Journal*, *Tunneling and Underground Space Technology*, *Proceedings of the Combustion Institute*, and at the International Association for Fire Safety Science (IAFSS) Symposiums among other conferences.

# PRESENTATION DESCRIPTIONS AND PRESENTERS' BIOGRAPHIES

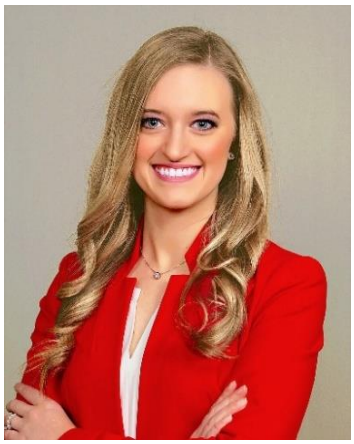
## Cybersecurity for Fire Protection Systems

*– Victoria Hutchison*

Fire protection systems are increasingly networked to Building Control Systems (BCS), Internet of Things (IoT), and other platforms that are, by design or oversight, exposed to the public-facing Internet. This emerging environment leads to unique and novel cyber vulnerabilities, and attacks on fire protection systems have the potential to have significant consequences. However, a thorough understanding of cybersecurity issues related to fire protection systems has been lacking. This presentation will provide an update on the initial findings of an on-going Research Foundation project, which will review the expansiveness of cyber vulnerabilities for fire protection systems (including awareness of them), the severity of the consequences, and identify gaps in existing cybersecurity provisions for fire protection systems and necessary next steps.

## Victoria Hutchison

*Research Project Manager, Fire Protection Research Foundation at NFPA*



Victoria Hutchison is a Research Project Manager at the Fire Protection Research Foundation (FPRF), the research affiliate of NFPA, where she plans, manages and facilitates research in support of the NFPA mission. At the Foundation, her research is focused on the hazards associated with emerging technologies, the reliability and effectiveness of safety systems and other relevant fire and life safety related issues. Victoria is a graduate of Oklahoma State University and Worcester Polytechnic Institute, where she earned her B.S. in Fire Protection and Safety Engineering Technology and her M.S. in Fire Protection Engineering, respectively. She also has experience at a fire protection engineering firm where she focused on fire protection system design and engineering analyses for commercial and residential properties. Victoria is a member of the Society of Fire Protection Engineers and an associate editor of the SFPE Handbook of Fire Protection Engineering.

# PRESENTATION DESCRIPTIONS AND PRESENTERS' BIOGRAPHIES

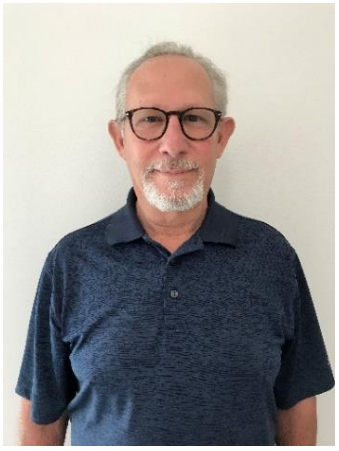
## ERRCS/BDA Basics – The New Wild West

*– Jay Levy*

Ever since the requirements for Emergency Responder Radio Coverage Systems (ERRCS) emerged from the Appendix of the 2009 IFC to the main body of the 2012 edition, it's been a challenge to both the industry and the AHJs. The system was introduced to address the performance of emergency responders' portable radios, ensuring all buildings meet the required level of radio coverage within the building (95-99%). This presentation will cover the evolution of the ERRCS and bidirectional amplifiers (BDAs) requirements in the IFC/CFC and NFPA. The presentation will review how building construction, size, features and other elements can have a negative impact on signal strength required for reliable communications, and provide solutions for enhancing the in-building radio frequency signal coverage with an ERRCS comprised of a Bi-Directional Amplifier (BDA)/ Signal Booster and Distributed Antenna System (DAS). Attendees will be familiarized with the proper layout including basic design, components, and testing, along with highlighting some of the more important "watch-outs" and challenges.

## Jay Levy

*Business Development Manager, Saf-Com Supply Inc.*



Jay Levy been in the alarm industry since the age of 12. While working for Honeywell he was introduced to the fire alarm side of the industry. Since then he has remained involved and impassioned, representing several national and international firms, including Morse Products (from 1998), Hochiki International (from 2006), and currently, with Saf-Com Supply Inc (from 2017). Jay is committed to excellence in fire and life safety, involving himself in various endeavors to mentor and coach others, including two terms as president of the California Fire Alarm Association (CAFAA) in 2018 and 2019, as well as Alternate representing CAFAA on the NFPA 72 Technical Committee on Testing and Maintenance of Fire Alarm and Signaling Systems (SIG-TMS) over many code edition cycles. Jay has been quoted in various trade journals and radio shows where, regardless of topic, he focuses on safety, particularly fire / life safety.

# PRESENTATION DESCRIPTIONS AND PRESENTERS' BIOGRAPHIES

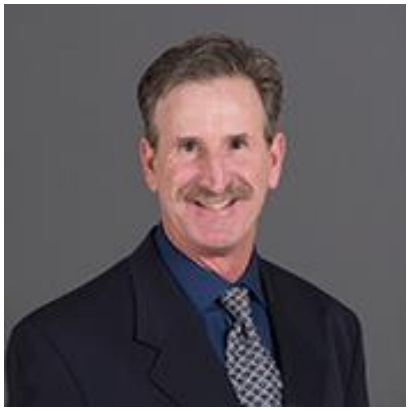
## The 2019 California Fire Code and NFPA 4, Standard for Integrated Fire Protection and Life-Safety System Testing

*– Timothy J. Lawyer SET*

The 2019 California Fire Code now adopted NFPA 4 as a standard that applies to both new and existing life-safety systems for high-rise and smoke-control systems. Outside of initial acceptance testing, the testing of emergency control functions was not always done correctly or completely. Individual system design and installation standards have long provided acceptance testing requirements that these individual systems will perform as intended. However, there was no "code mandated" test to confirm these systems interact appropriately with each other. NFPA 4 addresses these gaps between codes and standards for the testing of complex systems and addresses required testing frequencies. This presentation will outline the history and development of both NFPA 3 and 4, the requirements of NFPA 4, and how it will impact the testing, maintenance, and inspection of life-safety systems.

## Timothy J. Lawyer SET

*Senior Consultant, Jensen Hughes*



Tim's career in fire protection includes over 30 years of experience in the design, installation, and testing of fire alarm and special hazard systems. Tim has been performing smoke control special inspections for 22 years out of the Jensen Hughes San Diego office. Tim's responsibilities span project management, site surveys, cost estimates, design drawings, technical writing, smoke control inspections, schedule development, commissioning, and test-witnessing. Structures he has worked on include military, airports, malls, high-rise buildings, casinos, healthcare, institutional, large mixed-use facilities, correctional, and educational. He has provided support as an expert witness for fire alarm and suppression systems. Internationally, he has performed the commissioning and final acceptance testing of industrial fire alarm and suppression systems in the Middle East and South Asia.

Tim is NICET Level IV certified for Fire Alarm Systems, Level III for Special Hazard Systems, and Level III for Special Hazard Systems Layout. NFPA technical committees he has served on include NFPA 72, NFPA 17, and NFPA 17A.

# PRESENTATION DESCRIPTIONS AND PRESENTERS' BIOGRAPHIES

## Impact of Code Compliance

### Intersectionality of Arson Investigation and the Codes

*– Robert Rowe*

Do not expect a long PowerPoint with lots of pictures and codes. Instead, expect open discussion and interaction as we explore the intersectionality of arson investigation and the Codes.

Having been a fire marshal and a fire investigator with a municipal Fire Department, then a private investigator and code consultant provides unique insights into the connection between code compliance and investigations of fire related death, injuries, and destruction. Fire Prevention and Arson Investigation tend to occupy separate and distinct universes, but their intersectionality cannot be denied and should be appreciated, studied, and extolled. Two incidents will serve as examples for discussion.

On December 8, 2006, a fire during the day on the ground floor of the Paradise Gardens apartments (Long Beach, CA) spread to the upper floors, trapping occupants. Sadly, two occupants perished in the upper floor hallway during their attempted escape, attributable to fire code violations that existed in the building.

On December 14, 2007, three sisters visiting their aunt died in a fire. Their aunt lived in an illegally converted garage. The sisters, ages 6, 7, and 9 succumbed to CO poisoning and burns when the 17-year-old aunt utilized a space heater to keep warm. The investigation revealed a widespread problem of unpermitted living conditions across Los Angeles County, leading to the Long Beach Aviles Law.

## Robert Rowe

*PyroCop, Inc.*

Robert Rowe began his fire service career in 1980 at Hughes Aircraft as a firefighter and inspector. In 1989 he began working for the Downey Fire Department where over his 17-year career he promoted up through the ranks to Deputy Fire Marshal. Robert managed the Fire Prevention/Investigation Division obtaining extensive knowledge and expertise in both Fire Investigation and Fire & Building Codes and Standards. Upon his retirement in 2007, he founded Pyrocop, Inc., providing fire investigative and fire consulting services to AHJ's, insurance companies, and law firms across the country.

Robert served as President of the Los Angeles Area Fire Marshals Association and President of the Area E Arson Task Force, where he was appointed as a Special Deputy by the U.S. Marshals Service. Robert served on the NFPA 1 Technical Committee and California State Fire Marshal's Automatic Extinguishing Systems Committee. Robert is a member of the California Conference of Arson Investigators, the International Association of Arson Investigators, and is the Executive Director of the Fire Sprinkler Advisory Board of Southern California, representing over 56 fire sprinkler contractors in the Los Angeles area. He continues to assist the City of Downey as a fire consultant.

# PRESENTATION DESCRIPTIONS AND PRESENTERS' BIOGRAPHIES

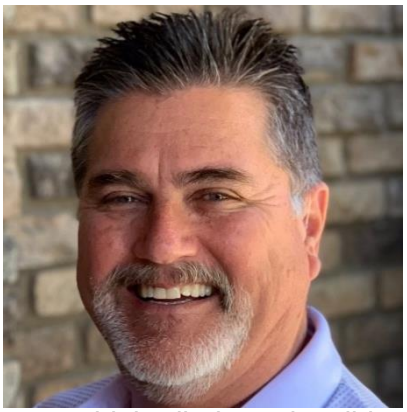
## Oxygen Depletion Systems in Warehouses

*– Kevin H. Scott*

Familiar with oxygen depletion systems as an alternative to fire sprinklers in warehouses? This presentation will introduce you to the concepts of oxygen depletion and how it can be used as a fire protection system. Topics will include effectiveness, applications, human safety concerns, testing methods, controls and monitoring.

## Kevin H. Scott

*KH Scott & Associates LLC*



Kevin retired as Deputy Chief of the Kern County Fire Department where he worked for 30 years. He also worked as Senior Regional Manager with the International Code Council. Kevin has extensive experience in the development of fire safety, building safety and hazardous materials regulations and has been actively involved in the code development process at the local, state, national and international levels for over 35 years. He is a sought after speaker having developed and presented many seminars on a variety of technical subjects including means of egress, high-piled combustible storage, hazardous materials, plan review and inspection practices, among others. He is the co-author of the popular Significant Changes to the California Fire Code books. Kevin now provides consulting services while also training and educating. He is the President of KH Scott & Associates, LLC.

# PRESENTATION DESCRIPTIONS AND PRESENTERS' BIOGRAPHIES

## California State Fire Marshal's Programs Update

*– Chief Michael Richwine*

The Mission of the Office of the State Fire Marshal (OSFM) is to protect life and property through the development and the application of fire prevention, engineering, education, enforcement and regulations. The office has a budget of over $46 million that funds over 200 personnel including 127 peace officers assigned to 20 different administrative, regulatory and enforcement programs. Chief Richwine will provide an update of the latest OSFM program improvements, regulations, codes and issues impacting the fire service today.

## Chief Michael J. Richwine

*California State Fire Marshal*

Chief Richwine was appointed State Fire Marshal (SFM) by Governor Newsom in May 2020 after Governor Brown appointed him as Acting SFM in December 2018. From 2012 to 2018, he was Assistant SFM. Overall, the Chief has served 32 years with the CAL FIRE / Office of the State Fire Marshal, and prior to OSFM he was a firefighter with the Hanford Fire Department.

During Chief Richwine's career he has held a variety of positions including Chief of State Fire Training, responsible for administering the California Fire Service Training and Education System; Chief of the Fire Engineering Division where he chaired several OSFM regulatory advisory committees; Deputy State Fire Marshal within Fire and Life Safety, Hazardous Materials and Pipeline Safety Divisions; and as a Fire Service Training Specialist in the State Fire Training Division.

Chief Richwine served for six years as a member of CAL FIRE Incident Management Teams and holds numerous professional certifications. He currently serves as ex-officio member of the Statewide Training and Education Advisory Committee and the State Board of Fire Services.

# PRESENTATION DESCRIPTIONS AND PRESENTERS' BIOGRAPHIES

## Energy Storage Systems

*– Raymond Bizal, PE*

The first edition of NFPA 855, *Standard for the Installation of Stationary Energy Storage Systems*, was just issued in August 2019. This brand new standard has been much anticipated to address this emerging technology, which has quickly become ubiquitous in the built environment. Attendees will learn about the different types of energy storage systems, issues surrounding recent significant incidents, and the provisions of this new Standard.

## Raymond Bizal, PE

*Director, Regional Operations* | *NFPA*

Mr. Bizal is Director of Regional Operations at the National Fire Protection Association (NFPA). In this capacity, he oversees the North American Regional Directors, who provide outreach and advocacy to NFPA stakeholders regarding the many activities undertaken by the Association. This includes supporting the adoption and enforcement of NFPA codes and standards, identifying tools and solutions for fire, electrical and related hazards, and advocating for fire safety at the local and state legislative levels. He currently serves as Immediate Past President of the Board of Directors for the Southern California Chapter of the Society of Fire Protection Engineers (SFPE), a Board member at-large for the Cascade (Portland) Chapter of SFPE, and a member of the Los Angeles Fire Department's Fire Code Advisory Committee.

Prior to joining NFPA in 2000, Ray spent 12 years with the International Conference of Building Officials (ICBO) and International Fire Code Institute (IFCI), where he served in several positions, including Uniform Fire Code Coordinator and Manager of Code Development. As manager of code development, he was responsible for the development of the Uniform Codes and related documents, as well as ICBO's participation in the technical development of the International Code Council's (ICC) inaugural International Codes and related documents. He also served as staff liaison for the drafting and development of the Wildland Urban Interface Code in the late 1990's, which was produced through the California State Fire Marshal's office from a FEMA grant.

With over 30 years in the fire protection profession, Ray also worked at the Lockheed Missiles and Space Company Fire Department as a fire protection specialist, and Factory Mutual Engineering Association as a loss prevention consultant. He is the 2006 recipient of the Western Fire Chiefs Association's Robert W. Gain Award and the 2014 recipient of the California Fire Chiefs, Northern California Fire Prevention Officer's Charles H. Gray Memorial Award. Holding a Bachelor's degree in Mechanical Engineering from the University of Colorado at Boulder, he is a registered Fire Protection Engineer in California.