2026 WUI Fire Engineering Summit
August 10-12, 2026
College Park, Maryland, USA

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2026 WUI Summit Speakers, Bios, & Abstracts

Abdullah Rehman, MEng, PhD Candidate
King's College London

Abdullah Rehman is a PhD student in the Heat and Fire Lab at King's College London, funded by the Leverhulme Centre for Wildfires, Environment, and Society. He obtained his MEng in Biomedical Engineering from Imperial College London in 2022, where he specialised in computational methods and data analysis. Prior to starting his PhD, he worked as a software engineer developing digital twins and surgical simulations.
Abdullah's research focuses on understanding wildfire risk and fire spread mechanisms in the Wildland-Urban Interface. The ultimate goal of his PhD is to mitigate wildfire driven impacts to communities using data-driven and physically accurate methodologies.

Poster: Resolving Sub-Metre Fuel Heterogeneity in the Wildland–Urban Interface for Structure-Level Fire Risk Assessment

Wildland–urban interface (WUI) fire risk assessments commonly rely on fuel maps with spatial resolutions on the order of tens of metres, which are insufficient to represent the structure-adjacent fuels that govern fire exposure within the Home Ignition Zone. This presentation introduces a scalable remote sensing framework for sub-metre resolution mapping of spatial exposure variables relevant to structure risk. The method applies object-based segmentation and

	classification to identify individual vegetative and residential fuel elements with a baseline accuracy of 78%. The approach is demonstrated globally and applied to the 2017 Pedrógão Grande Portugal fire, using fuel distributions, separation distances, and wind conditions to develop a structure loss prediction model achieving an accuracy of 75%. Results illustrate how high-resolution fuel mapping improves characterisation of fire exposure and enables parcel- and community-scale risk assessment in regions where detailed fuel data are otherwise unavailable, with direct implications to mitigation planning and exposure reduction.
	**Alana Miska, MS, EIT** **Simpson Gumpertz & Heger (SGH)** Alana Miska is an Associate Project Consultant at Simpson Gumpertz & Heger Inc. (SGH), where she provides fire and life safety code consulting for complex building projects across the United States. Her work includes smoke control analysis, egress planning, hazardous materials compliance, and fire protection strategy development. Alana holds an M.S. in Fire Protection Engineering and a B.S. in Chemical Engineering from Worcester Polytechnic Institute and is an Engineer-in-Training (EIT). Her graduate research on flame spread under non-steady wind conditions was published in Fire Safety Journal. She supports SGH initiatives focused on wildfire resilience and translating evidence-based WUI mitigation into codes, standards, and policy. *Poster: From Practice to Policy: Examining Wildfire Hazard Mitigation & Regulatory Frameworks* Wildfire mitigation guidance is abundant, spanning peer-reviewed research, agency and community programs, and insurer recommendations, yet adoption into codes and policy remains uneven. This presentation describes an evidence-to-policy mapping effort that couples (1) a PRISMA-based systematic review of wildfire hazard mitigation literature and programs with (2) a structured review of model codes and standards (e.g., NFPA 1140/1144 and the ICC International Wildland-Urban Interface Code) plus selected state and local requirements. Findings are synthesized across home and property protection, education and outreach, community and land-use planning, and policy, economics, and insurance. A weighted gap-ranking framework (evidence strength, feasibility, cost, and insurer/regulator alignment) then identifies the most consequential translation gaps and the most actionable opportunities for engineers, AHJs, and policymakers to close them.

Albert Simeoni, PhD
Worcester Polytechnic Institute

Professor Simeoni is an internationally recognized expert in fire and wildland fire and fire science, with over 120 journal papers, conference papers, and book chapters. He has more than 20 years of experience developing experimental, analytical, and numerical techniques to better understand fire dynamics and to predict fire and wildland fire behavior. Before joining WPI, he held academic leadership positions in fire research in the UK (University of Edinburgh) and in France (University of Corsica). He has also experience as a consultant in fire science in the U.S. and has spent over 10 years volunteering and working as a firefighter in France. Starting as a volunteer firefighter, he ultimately led all aspects of fire, wildland fire, and rescue operations, in the capacity of Chief of Fire Station.

Panel #3 - WUI Education for Engineers
Wednesday, August 12, 1:15 – 2:00 pm

Ali Ashrafi, PhD, PE, CFEI
Thornton Tomasetti

Dr. Ali Ashrafi received his PhD in Civil Engineering and Engineering Mechanics from Columbia University and is currently a Principal at Thornton Tomasetti. Ali is a licensed Civil and Fire Protection Engineer and a Certified Fire and Explosion Investigator. Ali has overseen numerous projects including performance based structural fire engineering at large-scale industrial and iconic structures throughout the US such as the Shed in New York City, Seaport World Trade Center in Boston, Pittsburgh International Airport, and Kravis Center in Florida. Ali also has extensive experience investigation damages to buildings, including as a result of fires. Ali's work includes looking at emerging topics in fire safety such as fire safety of mass timber construction, electric vehicles, and energy storage in urban environments, as well as wildfire resilience. Dr. Ashrafi has been an Adjunct Professor at Columbia University, having taught both Structural Fire Engineering and Earthquake and Wind Engineering. Ali is co-chair of the ASCE Fire Protection Committee.

Panel #2 - How Can Engineers Help Drive Better Decision-Making in WUI Communities?
Tuesday, August 11, 2:00 – 2:45 pm

Amelia Pludow, PhD
Jensen Hughes

Amelia is a senior consultant on Jensen Hughes' wildfire risk mitigation team working out of the Southern California region. She has conducted wildfire research at the parcel scale up to the forest scale and focuses on social vulnerability associated with wildfire risk and the use of spatial analysis to develop risk reduction strategies. She is experienced in Geographic Information Systems (GIS), risk mitigation and resilience planning, demography, spatial statistics, optimization and modeling. Amelia is especially interested in using innovative datasets and methods to understand spatial and demographic variation in risk and using these findings to inform policy solutions. She currently manages and contributes to wildfire risk mitigation assessment, planning, and research projects for utilities, communities, nonprofits, government agencies and private sector clients across California and in other fire prone regions in North America.

Poster: Beyond Technical Analysis - Lessons in Community and Stakeholder Engagement from a Regional Community Wildfire Protection Plan (CWPP)

Recent wildfire events, including the 2020 Bobcat Fire, 2024 Bridge Fire, and 2025 Eaton Fire, affecting the San Gabriel Valley, have underscored the need for regional approaches to wildfire resilience that extend beyond technical analysis alone. This presentation draws from the development of a Regional Community Wildfire Protection Plan (CWPP) for the San Gabriel Valley Council of Governments (SGVCOG), highlighting how effective community and stakeholder engagement is essential to translating WUI fire engineering into meaningful action. While wildfire hazard and risk analyses provided the baseline foundation of the project, success depended on facilitation, risk communication, and coordination across multiple jurisdictions and stakeholder groups. Through a cohesive engagement process such as public workshops, stakeholder and technical advisory group coordination, the project team worked to make complex wildfire hazards and risk information accessible, credible, and actionable. The presentation shares lessons learned and practical strategies for fire protection engineers supporting community-scale wildfire resilience.

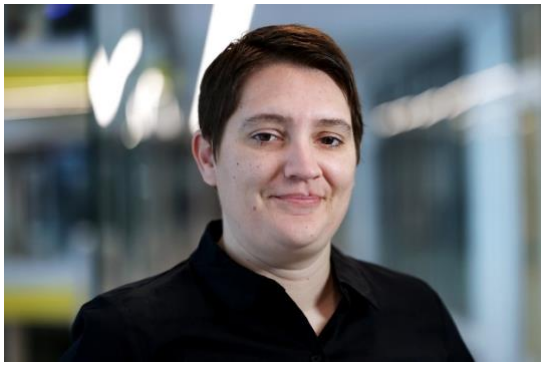
	**Andrew Foote** **AXA XL Risk Engineering** Andrew Foote has worked for 15+ years as a loss prevention engineer engaging with commercial property clients across the United States to identify exposures which threaten property and business operations. Since 2018 he has developed a specialized focus on mitigating wildland fire hazards across a broad range of commercial / industrial occupancies and working with these clients to develop and implement strategies for successful outcomes. In the course of these interactions Andrew has worked directly with nearly every major commercial insurance market and is able to share his insights into their risk appetites and hazard identification methodologies. A member of the International Association of Wildland Fire and regular presenter at the Oregon Governors Occupational Safety and Health conferences he brings a wealth of experience and valuable lessons to share with those interested in protecting their property and businesses. *Speaker: Wildfire Loss Prevention in the WUI - A Commercial / Industrial Insurance Perspective* *Tuesday, August 11, 3:05 – 3:25 pm* Well-protected communities require resilient public infrastructure, medical facilities, services, and employment centers. These facilities often feature very different construction methods and materials relative to residential properties and carry unique vulnerabilities when challenged by wildland fires. Planning for long-term resilience requires careful and holistic assessment to ensure continuity during and after these events. Join us for a discussion and share observations of what it takes to assess and protect these community keystones.
	Ankush Jha, PhD Candidate **Michigan State University** Ankush Jha is a PhD candidate in Civil and Environmental Engineering at Michigan State University, where his research focuses on fire safety engineering, evacuation modeling, and infrastructure resilience under extreme hazards. His work examines how fire dynamics, human behavior, and transportation network performance interact to

influence evacuation outcomes in both building-scale and community-scale scenarios. Ankush's research spans fire-induced evacuation modeling, resilience-based performance assessment, and data-informed decision support for hazard mitigation, with a growing emphasis on wildland–urban interface fires.

He has contributed to peer-reviewed journal publications and conference presentations in the areas of fire engineering, evacuation analysis, and hazard resilience, and has experience integrating physics-based fire modeling with transportation and evacuation simulations. Ankush has also been actively involved in teaching and mentoring as a graduate assistant, supporting courses in engineering analysis and modeling. His broader academic interests include performance-based fire design, evacuation under uncertainty, and the development of engineering tools to support safer, more resilient communities.

Poster: Strategies for Enhancing Wildfire Evacuation Efficiency Considering Realistic Fire Spread and Vehicle Obstruction Scenarios

Wildfire evacuations in wildland–urban interface communities are increasingly challenged by complex terrain, rapid fire spread, and transportation network disruptions. Many existing evacuation studies assume static road conditions and overlook the combined effects of terrain-driven fire behavior and traffic breakdowns caused by abandoned vehicles. This study proposes an integrated framework to evaluate evacuation network resilience under wildfire scenarios by explicitly coupling fire spread, terrain effects, and dynamic traffic disruptions. Fire progression is modeled using a physics-based wildfire spread approach derived from Rothermel fire behavior formulations, accounting for slope, wind, and fuel characteristics to estimate spatially varying fire arrival times. These arrival times are translated into time-dependent road closures and capacity reductions. Abandoned vehicles are represented as stochastic, temporary obstacles whose likelihood increases with congestion and hazard exposure. Evacuation demand includes ordered evacuees and dislocated occupants with time-dependent departure behavior and multiple safe destinations. Evacuation flows are simulated using dynamic traffic assignments, and resilience is quantified using clearance time and evacuated-before-deadline metrics. Preliminary results indicate that slope-accelerated

	fire spread and abandoned vehicles substantially reduce evacuation performance, particularly along uphill corridors and critical bottlenecks.
	**Ann Jeffers, PhD** **University of Michigan** Ann Jeffers is an Associate Professor in the Department of Civil and Environmental Engineering at the University of Michigan. Her research is related to analysis of structures subjected to extreme load events, especially fire; various topics in fire safety engineering (e.g., structural fire engineering, smart firefighting, wildland-urban interface fires); advanced finite element methods, including isogeometric analysis; multiphysics simulation, especially coupled fire-structure interaction. *Moderator, Panel #2 - How Can Engineers Help Drive Better Decision-Making in WUI Communities?* *Tuesday, August 11 2:00 – 2:45 pm*
	**Arnaud Trouvé, PhD** **University of Maryland, College Park** Arnaud Trouvé is Professor and Chair in the Department of Fire Protection Engineering at the University of Maryland, College Park, USA. He joined the Faculty in 2001 with a PhD (1989) and Engineering Degree (1985) from École Centrale of Paris, France, and with previous experience as a combustion research engineer. Professor Trouvé's research interests include Computational Fluid Dynamics (CFD) and physical modeling of fire phenomena, including compartment fires, wildland fires, and urban fires. Professor Trouvé is a Fellow of the Combustion Institute and the recipient of the 2017 FORUM Sjölin Award. He has served on many editorial boards of journals in combustion and fire science and is currently on the editorial boards of Combustion Theory and Modelling and the Fire Safety Journal. Professor Trouvé is also a past Chair of the US Eastern States Section of the Combustion Institute (ESSCI) and a Trustee of the International Association for Fire Safety Science (IAFSS). He is a co-Chair of an initiative called the "IAFSS Working Group on Measurement and Computation of Fire Phenomena" (the MaCFP Working Group) and the past Chair of a network of leading higher-education

	institutions and research laboratories in fire safety engineering called the International Fire Safety Consortium (IFSC). *Co-host* *Opening Remarks* *Tuesday, August 11 8:30 – 8:45 am* *Speaker: Simulations of WUI/Urban Conflagrations with the Landscape-Scale Fire Spread Simulator Called ELMFIRE* *Wednesday, August 12, 11:20 – 11:40 am* We first review computational tools used for understanding and quantifying the fire risk in WUI/urban communities. We differentiate between: "building fire solvers" (and "building-cluster fire solvers") that are based on CFD and resolve indoor (outdoor) fire dynamics at single (multiple) building scales; and "urban conflagration solvers" that resolve outdoor fire dynamics at landscape/community scales. Conflagration solvers are used by practitioners to: quantify the fire risk; identify vulnerabilities; design new fire-resilience solutions; help optimize the emergency response; etc. We focus here on ELMFIRE and through ELMFIRE, review current challenges found in urban conflagration solvers: the uncertainties in the physical models that must work at coarse resolution; the uncertainties in the input data (vegetation, topography, building, and meteorological data); the scarcity of suitable validation data on fire dynamics. We also present illustrations of the current performance of ELMFIRE through reconstruction of a selection of past fire disasters in the US. *Closing Panel #5 - Creating the Infrastructure for WUI Fire Engineering Research and Collaboration.* *Wednesday, August 12, 4:30 – 5:00 pm*

August Harless
Lawrence Berkeley National Laboratory

August Harless is a Hazards Analyst in the Security and Emergency Services Division at Lawrence Berkeley National Laboratory. He holds a Bachelor of Science degree in Environmental Toxicology and specializes in identifying, characterizing, and assessing hazards associated with natural, technological, and human-caused events to support emergency management and safeguards and security programs.

August conducts both qualitative and quantitative hazard and consequence assessments, including the analysis of chemical, biological, and radiological materials, to develop technical risk assessment products that inform emergency planning and protective decision-making. His work includes evaluating changes to facilities, operations, and hazardous material inventories to understand their potential impacts on safety and response planning.

He is well versed in the use of statistical software, spatial analysis tools, and modeling and simulation techniques to understand hazard phenomena in both planning contexts and emergency response situations. In addition to his analytical role, August serves on Lawrence Berkeley National Laboratory's Incident Management Team as a Protective Action Unit Leader, where he provides consequence assessment expertise during incidents and supports protective action decisions.

Poster: Wildfire Risk Analysis supporting evacuation timing decisions at the Lawrence Berkeley National Laboratory, Berkeley, CA

To support wildfire preparedness and evacuation planning, this Wildfire Risk Analysis provides a detailed, location-specific foundation for understanding wildfire hazard (potential intensity and spread of wildfires) and risk (likelihood of wildfire exposure to structures and assets) at the Lawrence Berkeley National Laboratory (LBNL) in Berkeley, California. The risk analysis supports science-driven emergency preparedness by identifying the most vulnerable areas of the LBNL site and vicinity, quantifying fire behavior potential, and developing data-informed strategies to protect personnel during wildfire events.

	This data-driven risk analysis employed a variety of tools, spanning wildland fire behavior prediction software packages FlamMap and FARSITE, in combination with a new way of modeling fire growth, Inverse Arrival Time. These models inform the Lab's protective action strategies and general wildfire emergency preparedness, integrating site-specific evacuation time estimates to develop protective action decision zones. The trigger points required additional decisions on time-bound objectives and the definition of acceptable risk.
	**Babak Bahrani, PhD** **Eastern Kentucky University** Dr. Bahrani is an Assistant Professor in Fire & Safety Engineering Technology at Eastern Kentucky University. He holds a doctorate in Infrastructure and Environmental Systems from the University of North Carolina at Charlotte and has worked in both academic and industry settings. His expertise includes fire dynamics, wildfire behavior, performance-based design, and the thermal response of materials, with a focus on connecting engineering fundamentals to real-world fire safety challenges. Dr. Bahrani conducts experimental and computational research in wildfire and fire modeling and serves on technical committees with the National Fire Protection Association (NFPA) and the Society of Fire Protection Engineers (SFPE). His teaching emphasizes fundamental understanding, engineering judgment, and the practical application of codes and standards to prepare students for professional practice. *Moderator: Student Pitch Competition* *Tuesday, August 11, 12:00 – 12:30 pm* *Wednesday, August 12, 12:10 – 12:15 pm*

Birgitte Messerschmidt, PSFPE
National Fire Protection Association

Birgitte Messerschmidt is Director, Research, National Fire Protection Association. She is responsible for NFPA's Research Strategy, Research on fire problems and other safety issues, Data collection efforts to maintain NFPA's fire incident and fire service databases and the NFPA Research library. She has a M. Sc. In Civil Engineering from the Technical University of Denmark and has spent her entire career working on fire safety issues. Making our built environment more resilient to fire through better understanding of the impact of construction products and methods, as well as testing procedures and policy has been a career long passion. She has been involved in testing and research as well as standardization and advocacy. She has published and presented numerous papers on fire safety issues.

Panel #2 - How Can Engineers Help Drive Better Decision-Making in WUI Communities?
Tuesday, August 11, 2:00 – 2:45 pm

Brookelyn Conner
Oklahoma State University

Ms. Brookelyn Conner is a graduate student in Fire Safety and Explosion Protection master's degree program at Oklahoma State University. She has been conducting research to quantitatively assess WUI fire resilience of communities for the past 1.5 years. She has previously worked as a safety manager at Industrial Project Innovation (IPI) in Kansas City.

Poster: Development of a community-specific WUI fire resilience assessment model

Numerous efforts have been undertaken to improve resilience to wildland–urban interface (WUI) fires; however, the effectiveness and efficiency of these measures remain difficult to quantify. This challenge arises in part because WUI fire outcomes are governed by a wide range of interconnected performance attributes, making comprehensive resilience assessment highly complex. Furthermore, each WUI community exhibits

	unique characteristics across these attributes, complicating the selection of appropriate mitigation strategies. In this study, we developed two performance-based WUI fire resilience assessment models through the systematic anatomization of both regulatory codes and documented WUI fire outcomes into detailed performance attributes related to wildfire behavior, structural vulnerability, and human/community factors. These attributes and their interdependencies are organized across the four emergency management phases: mitigation, preparedness, response, and recovery. The resulting framework enables structured comparisons across communities with differing safety conditions and supports the development of tailored resilience strategies for WUI fire risk reduction.
	**Carlos Murillo-Rueda, PhD** **INERIS** Carlos Murillo is a fire safety engineer at INERIS, the French National Institute for Industrial Environment and Risks, based in France. He specializes in the CFD-based modelling of hazardous phenomena related to major industrial accidents, with a particular focus on fires, explosions, and the dispersion of hazardous and toxic gases. In his current role at INERIS, he leads and contributes to advanced consequence modelling studies supporting both industrial stakeholders and public authorities, from scenario definition to the interpretation of complex physical phenomena. Carlos holds a PhD in Process and Product Engineering from Université de Lorraine, where his research focused on the experimental and numerical analysis of combustion and explosion-related phenomena. His academic background provides a strong foundation in physics-based and phenomenological modelling approaches, which he applies to the development and validation of CFD models for fire behaviour and thermal effects. Through his work, Carlos actively contributes to the improvement of modelling methodologies and tools used in fire and explosion safety assessments, bridging applied research and engineering practice in the field of industrial fire safety.

	Poster: Hydrogen Storage Blowout Scenarios As Wildfire Ignition Sources In Wildland–Urban Interface Environments The large-scale deployment of hydrogen as an energy carrier raises critical safety challenges, particularly for underground storage facilities located near forested and wildland–urban interface (WUI) areas. This presentation addresses the potential fire and wildfire risks associated with accidental hydrogen releases from underground storage in salt caverns. Within the framework of the European FRHYGE project, a CFD-based consequence analysis was conducted for the hydrogen storage site of Manosque (France), focusing on a blowout scenario at the wellhead. Using Fire Dynamics Simulator (FDS), the study evaluates hydrogen dispersion, ignition, and resulting thermal radiation effects, accounting for local topography. The simulations identify forested zones exposed to critical heat flux levels exceeding 8 kW/m^2, indicating a high susceptibility to fire ignition. An additional wildfire simulation explores potential cascading effects between hydrogen infrastructure accidents and wildfire initiation. The results provide valuable insights for risk assessment and mitigation strategies for hydrogen storage facilities in fire-prone environments.
	Carol Rice, Certified Senior Wildland Fire Manager **Wildland Res Mgt** Carol Rice leads Wildland Res Mgt, which for 45 years has emphasized fire management consulting, especially in the urban/wildland interface. Carol has overseen and planned implementation of local and regional vegetation management plans in California. She has conducted risk assessments on various scales, ranging from parcels to entire countries, to catastrophe risk models for re-insurance entities. She has written or presented over 50 technical papers and presentations addressing fire ecology, fire behavior, and risk assessment in the urban wildland interface. Ms. Rice has prepared management plans dealing with vegetation management, structure ignition prevention and resource enhancement for many landowners throughout California. These best practices have been compiled into a reference book, Managing Fire in the Urban Wildland Interface: Practical Solutions.

She was a founding member of the Wildland Fire Section for the National Fire Protection Association serving on its Board for 10 years. Similarly, she was on the founding board of the International Association of Wildland Fire (serving for 12 years) and is Past Chair of the California-Nevada-Hawaii Fire Council.

She holds a BS in Forestry and a MS in Fire Science and Management, both from the Department of Forestry and Resource Management University of California, Berkeley.

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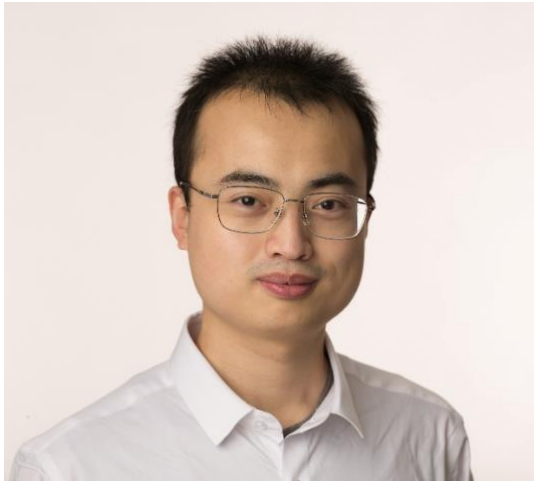


Chenzhi Ma, PhD
University of Nevada, Reno

Dr. Chenzhi Ma is a postdoc scholar at the University of Nevada, Reno, working on the WUI fire building damage assessment and fire spread modeling. He finished his PhD program at Johns Hopkins University under the supervision of Dr. Thomas Gernay, working on building fire response analysis, especially on composite steel frame structures. Before joining Johns Hopkins University, he completed his bachelor's degree at Central South University and his master's degree in civil engineering at Tongji University in China, focusing on seismic risk reduction. He has received honors, including the Excellent Master's Thesis at Tongji University and Outstanding Undergraduate of Central South University, and he was also the recipient of the Richard D. Hickman Fellowship at Johns Hopkins University

Poster: Structural-Level Probabilistic Wildfire Risk Assessment: Integrating Physics- and Machine-Based Models for WUI Damage Assessment

The increasing Wildland–Urban Interface (WUI) fire conflagrations in recent wildfire incidents highlights the need for tools and methods for pre-fire structural-level damage prediction and risk assessment. We introduce an interpretable machine-learning-based fragility model as part of a modular probabilistic wildfire risk assessment framework to predict WUI structures damage probabilities. The machine-based model is built from multi-source geospatial data, integrating over 50,000 CAL FIRE Damage Inspection (DINS) records with weather, building footprints, NAIP imagery, and canopy-height products, and includes physics-based features to quantify direct flame-contact potentials, radiative heating from surroundings, and ember exposures. The model predicts the probability of structural damage at a structure-level. The predicted damage probabilities are designed to construct fragility functions, which are then used as the damage assessment module within a probabilistic wildfire risk assessment framework.

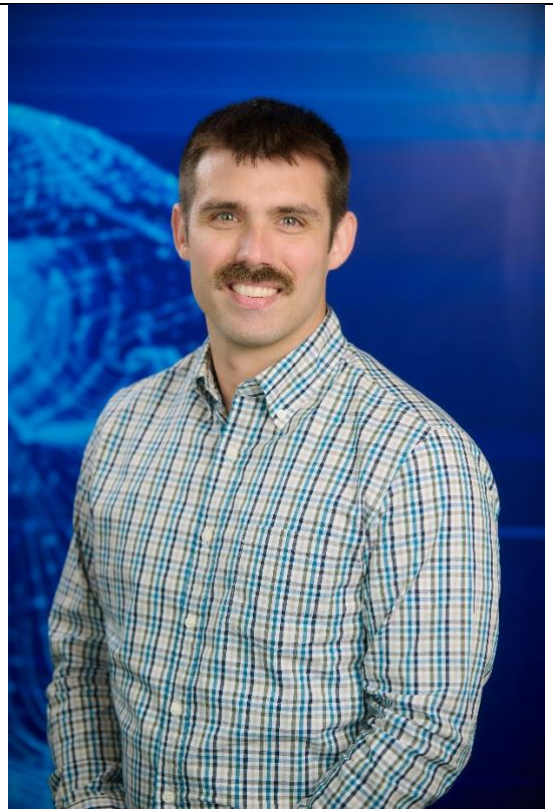
Chris Lautenberger, PE, PhD
President & CEO, CloudFire, Inc.

Chris Lautenberger is a fire scientist with an MS in Fire Protection Engineering from WPI and a PhD in Mechanical Engineering from UC Berkeley. He is a licensed Fire Protection Engineer in California. Chris has been active in the fire modeling field for 25 years with interests ranging from soot formation in diffusion flames to condensed-phase pyrolysis. Recently, his primary focus has been the development and deployment of open-source wildfire spread and risk modeling techniques, including real-time forecasting of active fires.

Speaker: "Simulations of WUI/Urban Conflagrations with the Landscape-Scale Fire Spread Simulator Called ELMFIRE"
Wednesday, August 12, 11:20 – 11:40 am

We first review computational tools used for understanding and quantifying the fire risk in WUI/urban communities. We differentiate between: "building fire solvers" (and "building-cluster fire solvers") that are based on CFD and resolve indoor (outdoor) fire dynamics at single (multiple) building scales; and "urban conflagration solvers" that resolve outdoor fire dynamics at landscape/community scales. Conflagration solvers are used by practitioners to: quantify the fire risk; identify vulnerabilities; design new fire-resilience solutions; help optimize the emergency response; etc. We focus here on ELMFIRE and through ELMFIRE, review current challenges found in urban conflagration solvers: the uncertainties in the physical models that must work at coarse resolution; the uncertainties in the input data (vegetation, topography, building, and meteorological data); the scarcity of suitable validation data on fire dynamics. We also present illustrations of the current performance of ELMFIRE through reconstruction of a selection of past fire disasters in the US.

	**Christine Wiedinmyer, PhD** **University of Colorado, Boulder and University Corporation for Atmospheric Research (UCAR)** Dr. Christine Wiedinmyer has deep ties to UCAR and the U.S. National Science Foundation National Center for Atmospheric Research (NSF NCAR), which UCAR manages. She worked as an NSF NCAR scientist for 16 years and subsequently served on the UCAR Board of Trustees from 2019 until 20025, when she was named Director of UCAR Community Programs in 2025. She is the associate director for science at the Cooperative Institute for Research in Environmental Sciences (CIRES) at the University of Colorado Boulder, as well as a research professor at the university. Dr. Wiedinmyer's research is focused on the emissions of pollutants to the atmosphere and their downwind impacts. She has developed a model to predict pollutant emissions from biomass burning, open waste burning and incomplete combustion sources. Dr. Wiedinmyer collaborates with others to investigate the impacts of these pollutant emissions, including air quality, climate and public health impacts. Her studies span from the local Front Range area to around the globe. *Panel #1 - Understanding the Impact of WUI Fires* *Tuesday, August 11 9:15 – 10:15 am*
	Daniel Gorham, PE **UL Research Institutes' Fire Safety Research Institute** Daniel is a research engineer for the Fire Safety Research Institute (FSRI), part of UL Research Institutes. His research interest includes understanding the natural hazard of wildfire and its impacts on society, particularly the structure ignition process and how to make homes and communities more resilient. Prior to joining FSRI Daniel worked as a research engineer at the Insurance Institute for Business & Home Safety (IBHS) where he led experimental work in the lab and in the field conducting post-fire investigations. He brings a wealth of fire science knowledge from his work experience at the National Fire

	Protection Association (NFPA) and the Fire Protection Research Foundation (FPRF). Daniel holds both a master's and bachelor's degree in fire protection engineering from the University of Maryland College Park. His master's work included time spent as a guest researcher at the USDA Forest Service' Missoula Fire Sciences Laboratory. In addition, his background as a firefighter/EMT help guide research on fire control measures, protecting firefighters, and code development to protect the public. He is a co-leader of the SFPE Foundation's WUI Working Group Research Module. *Moderator, Panel #3 - WUI Education for Engineers* *Wednesday, August 12, 1:15 – 2:00 pm* *Poster: Data Collection & Analysis Methodology for WUI Fires* Large wildland-urban interface fires can escalate rapidly from initial ignition to widespread conflagrations, as seen in recent incidents like the Camp, Marshall, Lahaina, Palisades, and Eaton Fires. These events often involve wind driven fire spread that overwhelms local response capabilities, with embers igniting spot fires far ahead of the main front. Understanding these fires is challenging but important to improve fire safety. Recent reviews by UL's Fire Safety Research Institute following the Lahaina, Palisades, and Eaton Fires rely on detailed spatiotemporal reconstruction, incorporating field assessments, responder location data, and geolocated images and videos collected across multiple jurisdictions. This methodology strengthens future efforts to analyze and learn from large scale WUI fire events.
	Darlene Rini, PE **Jensen Hughes** Darlene is a Director in the Research, Development, Testing & Evaluation Division of Jensen Hughes out of Southern California, where she also leads the firm's Wildfire Risk Mitigation Global Service Line. With over 25 years of experience, she has established herself as an expert in structural fire engineering, wildfire resiliency, and community disaster preparedness. Her work focuses on developing holistic wildfire risk mitigation strategies for urban and rural communities to support decision-making, policy

development, and wildland-urban-interface risk management plans at various scales – building, parcel, enterprise, and city/county levels. This includes projects such as Community Wildfire Protection Plans (CWPPs), wildfire evacuation planning, utility wildfire mitigation plans, independent evaluator services and post-fire investigative studies.

Darlene is pursuing her PhD in Wildfire Resiliency and GISciences at the University of California, Santa Barbara, building on a solid academic foundation that includes multiple master's degrees in Fire Protection Engineering and Structural Engineering from top universities. Darlene actively contributes to various organizations, including the Ventura County Wildfire Collaborative and subject matter advisory roles to FEMA, SFPE, local fire departments, legal firms, etc.

Speaker: A Fire Engineering and Advanced Geospatial Analytics Approach to Wildfire Evacuation Planning
Tuesday, August 11, 5:15 – 5:35 pm

Wildfire evacuations in the wildland–urban interface (WUI) increasingly involve large populations, constrained road networks, and rapidly evolving fire behavior, yet there are few standardized methods for evaluating evacuation adequacy. This paper examines adapting fire engineering egress concepts, traditionally used for building fire safety, for wildfire evacuation planning at the neighborhood scale. This study evaluates prescriptive egress calculation methods (e.g., maximum travel distance, exit separation) and the Available Safe Egress Time versus Required Safe Egress Time framework (ASET vs. RSET) using geospatial analytics, agent-based modelling and fire spread simulation. Case studies from multiple WUI neighborhoods in California show that prescriptive proxies can efficiently identify evacuation deficiencies at low analytical cost. The use of performance-based analysis demonstrates that evacuation feasibility is highly sensitive to fire location, rate of spread and concurrent evacuation demand of several neighborhoods sharing limited road capacity. These findings suggest that traditional fire engineering approaches at the neighborhood-level alone may understate evacuation risk, but when combined with performance-based methods can provide a more robust and practical framework for wildfire evacuation planning.

	Poster: Beyond Technical Analysis - Lessons in Community and Stakeholder Engagement from a Regional Community Wildfire Protection Plan (CWPP) Recent wildfire events, including the 2020 Bobcat Fire, 2024 Bridge Fire, and 2025 Eaton Fire, affecting the San Gabriel Valley, have underscored the need for regional approaches to wildfire resilience that extend beyond technical analysis alone. This presentation draws from the development of a Regional Community Wildfire Protection Plan (CWPP) for the San Gabriel Valley Council of Governments (SGVCOG), highlighting how effective community and stakeholder engagement is essential to translating WUI fire engineering into meaningful action. While wildfire hazard and risk analyses provided the baseline foundation of the project, success depended on facilitation, risk communication, and coordination across multiple jurisdictions and stakeholder groups. Through a cohesive engagement process such as public workshops, stakeholder and technical advisory group coordination, the project team worked to make complex wildfire hazards and risk information accessible, credible, and actionable. The presentation shares lessons learned and practical strategies for fire protection engineers supporting community-scale wildfire resilience.

Debadrita Das, PhD Candidate
University of Michigan

Debadrita Das is a third-year PhD candidate in the department of Civil and Environmental Engineering at University of Michigan. The primary focus of her research is applying numerical methods to simulate real-world natural hazard scenarios. She is currently working on modeling wildfire spread through firebrands using a coupled CFDEM approach. She was a 2023-2024 Michigan Institute for Computational Discovery & Engineering (MICDE) fellow.

Poster: Modeling Ignition of Recipient Fuels in the WUI using a Multisphere CFD-DEM Approach

The study of transport and deposition of firebrands is important to identify the regions in the Wildland Urban Interface (WUI) that are most susceptible to ignition during a wildfire. To investigate the fire spread at WUI, a Computational Fluid Dynamics (CFD) and Discrete Element Method (DEM) approach is adopted. The wind field for firebrand transport is modeled in CFD software OpenFOAM and the firebrands are modeled in DEM software LIGGGHTS. The irregular shape of firebrands is captured by the multisphere method in DEM. It also allows us to simulate 3D temperature gradients within a firebrand. Upon deposition, the heat transfer from the firebrands is implemented with convective and radiative heat transfer to the surrounding fluid, conductive heat transfer within a firebrand and across firebrands in contact, and the heat generated due to burning. The model is validated and applied to simulate firebrand induced ignition of recipient fuel around a structure.

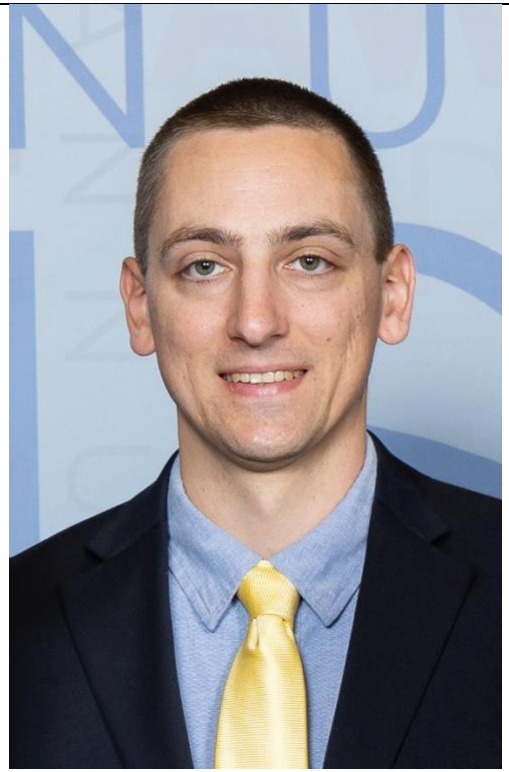
Donna Settle, PE, PMSFPE
Gallagher

Donna Settle, PE is a Property Risk Engineering Leader with more than 30 years of experience evaluating complex commercial occupancies and external exposures across manufacturing, logistics, cold storage, healthcare, education, and research environments. She specializes in translating technical fire protection and risk-engineering concepts into practical, defensible mitigation strategies for clients with large, diverse portfolios.

Donna began her career as a facilities engineer in 1993 and has held engineering and risk consulting roles at Rockwell Space Operations, Factory Mutual Engineering (FM), Zurich, Marsh/Wortham, and now Gallagher. Her background spans property loss prevention, risk and exposure analysis, fire protection system evaluation, loss investigation, and civil-site considerations such as drainage and access, experience that informs her understanding of how external hazards, including those encountered in WUI environments, influence building vulnerability and emergency response effectiveness.
In her current role at Gallagher, Donna leads a national property risk engineering team and serves as a liaison between clients and carrier engineers to ensure alignment on risk priorities, capital planning, and program stability. She is a licensed Professional Engineer in Texas and an active member of SFPE, NFPA, NSPE, URMIA, and PRIMA.
Donna brings a practical, engineering-driven perspective to emerging risk challenges, including evolving WUI exposures and community-scale mitigation strategies.

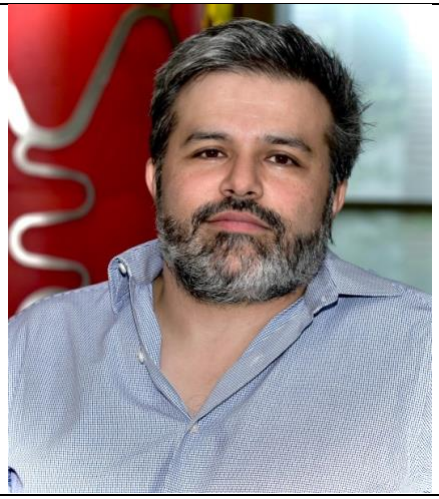
Panel #2 - How Can Engineers Help Drive Better Decision-Making in WUI Communities?
Tuesday, August 11, 2:00 – 2:45 pm

	**Elsa Pastor, PhD** **Centre for Technological Risk Studies, Universitat Politècnica de Catalunya** Elsa Pastor, PhD, Associate Professor at the Chemical Engineering Department of Universitat Politècnica de Catalunya Barcelona and research scientist at the Center for Technological Risk Studies at UPC. She develops teaching and research activities in diverse fields related to wildfire management and technological risk analysis. Over the last 15 years, she has studied several aspects of fire behavior and dynamics by a multidisciplinary approach, combining both experimental and modeling techniques in a wide range of scenarios. She has profited from diverse fire environments (i.e. wildfires, wildfire research burning campaigns, outdoor large-scale industrial testing fields, compartment fires, laboratory set-ups, etc.) to observe monitor and analyze flames and their effect on different types of assets and ecosystems. She is currently leading the European Project WUIVIEW (wuiview.org), aimed at designing, setting-up and operating a virtual workbench service for the analysis of fire risk in the surroundings of buildings at the wildland-urban interface. *Panel #3 - WUI Education for Engineers* *Wednesday, August 12, 1:15 – 2:00 pm*
	Eric Link, PhD **National Institute of Standards and Technology** Dr. Eric Link is a fire protection engineer in the WUI Fire Group in the Fire Research Division at the National Institute of Standards and Technology (NIST). Since joining NIST in 2017, his research has focused on a post-fire case study of the devastating Camp Fire that occurred in Butte County, California in 2018 (Paradise, CA). The goal of this research is to better understand WUI fire incidents in terms of incident development, fire spread and progression, emergency response, and structure performance, to identify approaches to help communities at risk of WUI fire become more prepared. Findings and lessons learned range from structure ignition vulnerabilities and community fire spread hazards to evacuation complications and critical life safety aspects of WUI fire incidents. Dr. Link has also contributed to experiments to quantify firebrand showers through the measurement and characterization of airborne firebrands, and the measurement of fire

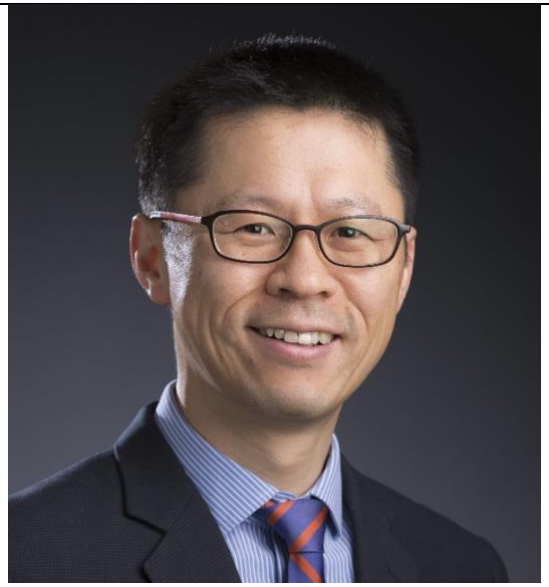
	spread from parcel-level WUI fuels. Knowledge gained through case studies and experiments has supported information transfer and training to WUI communities and first responders, and the development of community mitigation and preparedness methods. Dr. Link is a graduate of the University of Maryland, College Park (BS/MS FPE, PhD MechE). *Speaker: Evacuation Contingencies and Life Safety in WUI Fires* *Tuesday, August 11, 5:35 – 5:55 pm* Existing communities are not built to construction standards that prevent them from burning. In practice, this reality necessitates widespread evacuations to get people out of the path of WUI fires. Several fires over the last decade were characterized by high-profile evacuations, tragic incidents resulting in dozens of fatalities, and terrifying accounts of dangerous scenarios when there is not enough time to evacuate before the fire arrives. The Camp Fire, which occurred in California in 2018, is one example. The widespread use of ad hoc temporary refuge areas and an understanding of the compressed timeline during the Camp Fire highlight possible advances in evacuation planning. Determination of the required evacuation time and specific contingency plans for what to do in scenarios when there is not enough time can help manage risk. In the future, FPEs will be called upon to develop and use decision-support tools and evacuation and sheltering strategies.
	Erica Fischer, PhD, PE **University of Oregon** Erica Fischer, PhD, PE is an Associate Professor of Civil and Construction Engineering at Oregon State University. Dr. Fischer's research interests revolve around innovative approaches to improve the resilience and robustness of structural systems affected by natural and man-made hazards. Dr. Fischer performs research on a variety of different structural systems including steel, timber (CLT), composites (concrete-CLT and steel-concrete), and thin shells subjected to hazards such as earthquakes and fires. She has participated in post-earthquake reconnaissance team missions in diverse regions

	including Haiti, Napa, California, Italy, and Mexico City; and led post-wildfire reconnaissance after the 2018 Camp Fire, 2021 Marshall Fire, and recently after the 2025 Eaton and Palisades Fires in LA. Dr. Fischer has experience as a practicing structural engineer and holds a Professional Engineering license in the states of Washington, California, and Oregon. She is co-leader of the SFPE Foundation's WUI Working Group Policy Module. *Panel #1 - Understanding the Impact of WUI Fires* *Tuesday, August 11, 9:15 – 10:15 am* *Panel #4 - WUI Working Group Module Updates* *Wednesday, August 12, 2:00 – 2:30 pm*
	**Evan Sluder** **Insurance Institute for Business and Home Safety (IBHS)** Evan Sluder is an Engineer at the Insurance Institute of Business and Home Safety (IBHS), where his work focuses on wildfire science, building performance, and risk reduction strategies. His responsibilities include investigating fire behavior and building material performance under wildfire exposures, conducting post-fire analyses, and providing technical support for IBHS Wildfire Prepared Home and Wildfire Prepared Neighborhood programs. In addition to his technical research, Evan contributes to IBHS efforts in research communication and public policy by translating complex fire science into actionable guidance for stakeholders, practitioners, and policymakers. His work helps bridge the gap between experimental research, field observations, and real-world implementation to improve wildfire resilience at the community and policy levels. Evan holds a B.S. and an M.S. in Fire Protection Engineering from the University of Maryland, College Park.

	Poster: Ignition Vulnerabilities at the Wall-Foundation Interface in Exterior Wall Fire Test Methods Preventing structure ignition is a primary objective of wildfire mitigation due to the limited availability of firefighting resources. Exterior wall coverings and assemblies in the wildland-urban interface (WUI) are evaluated using test methods developed for compartment fire protection and life safety, which may not fully address ignition-driven vulnerabilities from external wildfire exposures. This study evaluates the ability of SFM 12-7A-1 and ASTM E2707 to represent WUI fire exposures. Experiments conducted on exterior wall assemblies and coverings, including products listed by the California Office of the State Fire Marshal, with fire-resistance-rated and typical wall construction. Test modifications evaluated the specified thermal barrier at the wall-foundation connection and an alternative wind-driven mulch bed fire exposure. Results show that wall systems meeting current acceptance criteria may permit fire entry into wall cavities and exhibit surface flame spread, highlighting limitations in current test methods and supporting revised evaluation approaches to enhance structure survivability.
	Fernando Raffan-Montoya, PhD **University of Maryland, College Park** Fernando Raffan-Montoya holds a BS in Aerospace Engineering from the Florida Institute of Technology and an MS and PhD in Aerospace Engineering from the University of Maryland, College Park. After serving as post-doctoral scholar and faculty specialist, Dr. Raffan-Montoya joined the Department of Fire Protection Engineering at UMD in 2022 as Assistant Professor, where he teaches courses in fluid mechanics, heat transfer, experimental fire dynamics and wildland fire. His research interests include material flammability (particularly novel experimental methods), fire testing, wildland/WUI fires, and the use of advanced technologies (sensing, robotics) in FPE applications.

	Dr. Raffan-Montoya has also served the SFPE Foundation in several capacities including membership in the WUI Working Group and co-chairing the Climate Change Working Group. *Moderator, Panel #1 - Understanding the Impact of WUI Fires* *Tuesday, August 11, 9:15 – 10:15 am* *Panel #3 - WUI Education for Engineers* *Wednesday, August 12, 1:15 – 2:00 pm*
	Grayson Bellemy, PhD Candidate **University of Maryland, College Park** Grayson Bellamy is a graduate researcher in the Department of Fire Protection Engineering at the University of Maryland. His work focuses on the experimental characterization and engineering modeling of material degradation processes relevant to fire safety, with particular emphasis on thermal decomposition, pyrolysis kinetics, and reduced-order modeling for large-scale fire simulations. His research integrates laboratory-scale thermal analysis, inverse parameter estimation, and physics-based fire modeling to improve the reliability of material response predictions under fire exposure. Grayson's recent work has examined the robustness of semi-global pyrolysis models for lignocellulosic materials, with applications to wildland–urban interface fires, mass timber construction, and heterogeneous fuel assemblies. He has contributed to the development and evaluation of thermal decomposition models implemented in widely used engineering tools such as the Fire Dynamics Simulator (FDS). Grayson's broader interests include fire exposure characterization, uncertainty-aware modeling, oxidative pyrolysis and smoldering, and the translation of fundamental

	material behavior into practical engineering guidance for risk assessment, standards development, and mitigation strategies in the built environment. *Poster: Assessing Reaction Mechanisms for Engineering Pyrolysis Models of WUI-Relevant Woody Fuels* Wildland-urban interface (WUI) fires expose vegetation and structures to highly variable thermal conditions, where the thermal decomposition of woody fuels strongly influences ignition, fire spread, and structural vulnerability. Engineering fire models used for WUI risk assessment rely on simplified pyrolysis representations, yet limited guidance exists on which reaction schemes provide reliable predictions under fire-relevant conditions. This work evaluates commonly used pyrolysis modeling approaches for woody fuels by comparing component-based (parallel) and lumped sequential reaction schemes using thermogravimetric data for Douglas fir and red oak. Models are calibrated and then tested against independent thermal histories not included in the optimization dataset. Results show that sequential reaction schemes provide more robust and transferable predictions than component-based models. These findings offer practical guidance for selecting pyrolysis models in WUI fire simulations, supporting improved parcel- and community-scale exposure assessment, risk modeling, and development of engineering-based mitigation strategies and standards.
	Haejun Park, PhD, PE **Oklahoma State University** Dr. Haejun Park is an Associate Professor in the Fire Protection and Safety Engineering Technology program at Oklahoma State University. Prior to joining OSU, he worked as a Fire Safety Engineer in Melbourne, Australia, and as a Fire Research Engineer in Wellington, New Zealand. At OSU, he teaches Fire Dynamics, Industrial Ventilation and Smoke Control, and Fire and Evacuation Modeling. His research interests include fire risk assessment methodologies as well as experimental and computational modeling studies. *Poster: Development of a Community-Specific WUI Fire Resilience Assessment Model*



Numerous efforts have been undertaken to improve resilience to wildland–urban interface (WUI) fires; however, the effectiveness and efficiency of these measures remain difficult to quantify. This challenge arises in part because WUI fire outcomes are governed by a wide range of interconnected performance attributes, making comprehensive resilience assessment highly complex. Furthermore, each WUI community exhibits unique characteristics across these attributes, complicating the selection of appropriate mitigation strategies. In this study, we developed two performance-based WUI fire resilience assessment models through the systematic anatomization of both regulatory codes and documented WUI fire outcomes into detailed performance attributes related to wildfire behavior, structural vulnerability, and human/community factors. These attributes and their interdependencies are organized across the four emergency management phases: mitigation, preparedness, response, and recovery. The resulting framework enables structured comparisons across communities with differing safety conditions and supports the development of tailored resilience strategies for WUI fire risk reduction.

Poster: Formation and Visualization of Wildfire-Induced Soil Water Repellency in Laboratory-Scale Experiments

Soil water repellency (SWR) arises from hydrophobic-layer formation that reduces the soil's ability to absorb water, accelerating rainfall conversion to surface runoff and increasing risks of erosion and flooding. Wildfire is a particularly strong driver of SWR, enhancing both the persistence and severity of soil hydrophobicity. However, many studies rely on muffle-furnace heating under uniform, isothermal conditions that fail to represent the steep temperature gradients and spatially heterogeneous heating produced during wildfires. To better capture wildfire-relevant processes and link microscale wettability changes to macroscale hydrologic responses, this study will develop an experimental framework that complements conventional approaches. It will evaluate top-down heating–induced temperature gradients and associated heat-driven transport, the influence of soil organic matter on hydrophobic-layer depth and continuity, and the role of initial soil moisture in controlling formation thresholds and post-heating stability. This approach will advance mechanistic understanding and improve predictions of post-wildfire runoff and soil erosion hazards.

	**Hamed Salehi, PE** **Holmes** Hamed Salehi is a Registered Fire Protection Engineer in California, Oregon, and Washington, and a Senior Fire Engineer at Holmes US, where he provides fire life safety consulting across a broad range of projects. He serves as President of the Northern California-Nevada Chapter of the Society of Fire Protection Engineers (NCN-SFPE), working to support the growth of the profession and connect fire protection engineers across the region. Hamed also serves as an adjunct lecturer at the University of Maryland, where he is passionate about contributing to the education and development of future fire protection engineers. He is co-leader of the SFPE Foundation's WUI Working Group Policy Module. *Moderator: Student Pitch Competition* *Tuesday, August 11, 12:00 – 12:30 pm* *Wednesday, August 12, 12:10 – 12:15 pm*
	**Haseeb Kazmi, MSc, PhD Candidate** **Centre for Technological Risk Studies, Universitat Politècnica de Catalunya** Haseeb Kazmi is a PhD student at the Centre d'Estudis del Risc Tecnològic (CERTEC), Universitat Politècnica de Catalunya (UPC), researching how Wildland–Urban Interface (WUI) communities can better prepare for and respond to wildfires. His work focuses on risk-based, multi-scale assessments that support civil protection planning, evacuation feasibility, and community resilience. His research examines how fire behaviour, settlement layout, vegetation–asset interaction, and road accessibility influence emergency response options, using map-based analysis and fire engineering principles. He holds an International Master of Science in Fire Safety Engineering (IMFSE) and has experience in fire engineering consultancy, experimental fire research, computational modelling, and the chemical manufacturing industry.

	Speaker: Fire Risk Assessment of WUI Communities Based on Internal Settlement Characteristics *Tuesday, August 11, 2:45 – 3:05 pm* WUI communities can cope with wildfires. The approach uses a set of quantitative, map-based indicators to evaluate key internal characteristics of WUI settlements that influence evacuation and shelter-in-place strategies. These include potential fire behavior within the settlement, settlement size, vegetation–asset interaction, the presence of vulnerable infrastructure, and road accessibility for residents and emergency vehicles. The methodology is applied to close to 500 WUI settlements in Catalonia (Spain), providing a comparative, operational overview of where evacuation may be constrained, shelter-in-place strategies may be challenging, and where targeted mitigation measures could improve preparedness and resilience.
	**James Urban, PhD** **Worcester Polytechnic Institute** Dr. Urban is an Assistant Professor in the Department of Fire Protection Engineering. His area of active research includes developing sensors and detectors for wildland and wildland-urban interface fires, computational modelling, experiments of the ignition and burning of wildland and manufactured materials and using flow visualization and computer vision techniques to measure fire and combustion phenomena. He is a co-leader of the SFPE Foundation's WUI Working Group Research Module. *Panel #4 - WUI Working Group Module Updates* *Wednesday, August 12, 2:00 – 2:30 pm*

Janice Coen, PhD
National Center for Atmospheric Research (NCAR)

Dr. Janice Coen is an atmospheric scientist specializing in computational fluid dynamics, fire behavior modeling, and infrared imagery analysis. She holds a PhD and M.S. from the University of Chicago's Department of Geophysical Sciences and a B.S. in Engineering Physics from Grove City College. Currently serving as Visiting Scholar at the University of San Francisco and Project Scientist at the NSF National Center for Atmospheric Research, she has developed two coupled numerical weather prediction-wildland fire behavior models and pioneered forecast methodologies integrating active fire detection data. Her research spans over 40 wildland fire events, 20 interdisciplinary sponsored research projects, and includes consulting in wildfire litigation and regulatory proceedings. She currently serves as a judge for the XPrize Wildfire competition.

Poster: Non-Classical Exposure Pathways in Terrain-Adjacent WUI Communities

WUI fire engineering methods commonly characterize exposure using parcel-centric assumptions of laterally uniform wind and edge-driven fire spread. Evidence from recent fires shows that these assumptions can fail in terrain-influenced communities, where stable stratification and terrain-following flow redirect fire spread and exposure at neighborhood scales. When these mechanisms are overlooked, parcel-level mitigation guidance and community risk assessments can misrepresent structure-relevant hazard.

This work examines exposure conditions in representative WUI communities using coupled weather–fire simulations and post-fire reconstruction at 100–300 m scales. Near-surface wind structure, fire spread, and exposure are analyzed in relation to terrain and community features such as greenways, drainage corridors, and open-space networks. Results show that stable, terrain-hugging flow can concentrate fire spread and ember transport into low-lying community corridors, allowing fire to penetrate well beyond expected exposure zones. These pathways are spatially localized and transient, yet they strongly influence ignition sequencing and damage patterns. An exposure-regime perspective is proposed to better bound these hazards for parcel risk assessment and community-scale planning.

Jason Smart, PE, MSCE
American Wood Council

Jason Smart is the Senior Director of Fire Engineering at the American Wood Council (AWC). Since joining AWC in 2013, Jason has led numerous projects related to fire safety and acoustical performance of wood construction. He serves on numerous consensus committees which promulgate referenced standards and is also active in development of model building codes. During the development of the U.S. mass timber code provisions, he provided technical support to the ICC Ad-Hoc Committee on Tall Wood Buildings and to the applicable code development committees regarding the development and execution of multiple fire test series which were deemed necessary to justify ICC code change proposals.

Prior to joining AWC, Jason worked for the International Code Council Evaluation Service (ICC-ES), where he evaluated a variety of building products, including wood products and related components and systems, for equivalency and compliance with U.S. model building code provisions. He also worked at the Institute for Business & Home Safety (IBHS) as a Project Engineer / Building Code Specialist prior to his tenure at ICC-ES. Jason is a licensed professional engineer and a graduate of Virginia Tech with a bachelor's degree Wood Science and Forest Products and a master's degree in Civil Engineering

Speaker: A Test-Based Approach to Assessment of WUI Fire Hardening on Walls and Soffits
Tuesday, August 10, 10:45 – 11:05 am

Where defensible space around a building is inadequate, hardening of the building envelope should address the potential for exposure to direct flame impingement. In order to study potential entry points for fire and identify exterior wall and soffit configurations that best minimize the risk of structure loss due to direct flame impingement in a WUI fire exposure, two series of WUI fire tests were performed. Details of the test assemblies are provided, along with heat flux and temperature measurements at various layer interfaces within the tested assemblies and an explanation of how the findings from these tests are being applied to help mitigate against wildfire losses in the WUI.

Jeannette Sutton, PhD
The Warn Room

Jeannette Sutton, PhD, is an internationally recognized scholar of alerts and warnings. With funding from the National Science Foundation, the National Oceanic and Atmospheric Administration, the US Geological Survey, and the Federal Emergency Management Agency, she has studied, taught, and written about risk communication, alerts, and warnings for more than two decades.

Her extensive expertise has led to consultation and speaking engagements domestically and around the world. Sutton has consulted with Federal, state, and local organizations and contributed to international research and training. In addition to work with public sector emergency management and public safety organizations, she has consulted to the US Fire Administration (wildfire), the National Center for Missing and Exploited Children (AMBER and Missing Person alerts), 911 Call Dispatchers, and University and College Campuses.

She works as an Associate Professor at the University at Albany. In 2024, Sutton launched *The Warn Room* to bring evidence-based research to practitioners by translating the science into practice. In this capacity, she conducts audits of historical alert and warning messages and reviews templates designed for future communication. Most recently, she became a co-host of *The Alerting Authority*; the only podcast focused entirely on alerts and warnings.

Keynote #3 - Why WUI Fire Engineering Needs Social Scientists
Tuesday, August 11, 4:30 – 5:15 pm

Jiwon Baik, PhD
Jensen Hughes

Jiwon Baik is a spatial data scientist specializing in wildfire risk mitigation, fire safety analytics, and AI-driven spatial decision support. She holds a PhD in Spatial Data Science and currently works as a Technical Professional in the Wildfire Risk Mitigation group at Jensen Hughes, where she supports large-scale wildfire risk assessments, fire code–

informed access evaluations, and infrastructure planning efforts for public agencies and electric utilities.

Dr. Baik's work focuses on developing scalable, data-driven, and AI-enabled methods to evaluate access, exposure, and vulnerability in complex urban and wildland–urban interface (WUI) environments. Her research integrates geographic information science (GIS), spatial optimization, and deep learning to advance risk-informed decision-making in fire safety and wildfire resilience. She has led the development of automated geospatial workflows for hydrant coverage assessment, hydrant-to-structure access evaluation, and fine-resolution regional wildfire risk mapping, enabling consistent and defensible analyses at jurisdiction-wide scales.

Poster: Quantifying Worst Case Fire Access: A Big Data Framework for Assessing the Compliance of Fire Code Structure Access

Fire codes require that all portions of a building exterior be accessible from fire apparatus and hydrants within a prescribed distance along an unobstructed route. In practice, this requirement is typically evaluated during plan review using manual or computer-based measurements in construction or permitting drawing sets. However, in research where access is assessed for jurisdiction-wide inventories, existing building stock, or wildfire risk planning, data-driven approaches commonly rely on straight-line distance evaluation. This presentation introduces a big-data–driven spatial framework for evaluating fire personnel and fire apparatus access to building perimeters. The approach identifies the travel distance from all hydrants and fire access roads to the furthest point along the exterior of a building, accounting for obstacles such as buildings, parcel boundaries, and other barriers. Using a large-scale application across Santa Barbara County, California, the presentation demonstrates how building-scale hydrant and fire road access requirements can be applied at City or County scale to help identify deficiencies in coverage and help inform infrastructure or operational improvements for fire or wildfire safety at scale.

Joe Hart, BSc (Hons), MSc, MIET, MIFireE, MSFPE, MIoL, AMEI
Delta Fire Engineering

An experienced engineer and academic, Joe Hart is Head of Delta Research and Development. Joe has extensive experience in developing fire strategies for buildings across the UK and specialises in the development of performance-based design solutions. Between 2021 - 2024 he held a part-time lecturer position at the University of Central Lancashire before setting up Delta Fire Training Ltd, a dedicated fire training business based in the UK. Within the Delta Innovation Group Joe is responsible for building the business and all day-to-day Operations, as well as working closely with clients to achieve their fire safety goals.

Poster: Field-Based Mapping and Characterisation of Urban and Peri-Urban Vegetation for Wildfire Mitigation in Los Angeles

This paper presents a field-based study conducted in Los Angeles aimed at mapping urban and peri-urban foliage to support wildfire mitigation efforts. The research focuses on identifying and documenting tree species located within designated wildfire zones, with attention to their physical characteristics and ignition potential. Fieldwork methods include on-site vegetation surveys, with geospatial mapping using satellite data, and species classification. The study provides a descriptive inventory of dominant and recurring tree species, analysing traits such as leaf structure, moisture content, bark characteristics, and fuel load density that influence flammability and fire behaviour. By linking species composition to wildfire risk, this research contributes localised ecological data that informs vegetation management, urban planning, and fire prevention strategies. The findings aim to support policymakers, land managers, and emergency planners in reducing wildfire vulnerability through evidence-based foliage assessment and mitigation planning, and draws on Delta Fire Engineering's first-hand experience in the 2025 Palisades fire.

Poster: The Burgum–Hart Tunnel: A New Experimental Platform for Firebrand Generation and Transport Studies

	This study presents a new experimental apparatus, the Burgum–Hart Tunnel, designed to investigate the production and behaviour of burning brands under forced airflow. The apparatus consists of a 2.4m enclosed tunnel in which a fan-driven flow is applied to a burning fuel load, entraining and propelling released brands. Experiments were conducted to observe brand release dynamics, transport behaviour, and survivability under repeatable flow conditions. The Burgum–Hart Tunnel enables controlled variation of airflow and fuel characteristics, providing a reproducible platform for studying firebrand generation. Results demonstrate that the apparatus can reliably produce burning brands representative of those observed in wildland and wildland–urban interface fires. This work introduces a novel experimental tool that improves understanding of firebrand-driven fire spread and supports development of more accurate predictive models. The work is influenced by Delta Fire Engineering's first-hand experience at the 2025 Palisades fire in Los Angeles and subsequent fieldwork.
	**Joseph Willi** **UL Research Institutes' Fire Safety Research Institute** Joseph Willi is a research engineer with UL Research Institutes' Fire Safety Research Institute. Since joining the team in 2017, he has been a main contributor to research projects regarding live-fire training, fire investigation, fire modeling, and fires in the wildland-urban interface (WUI). His current research is focused on better understanding mechanisms of structure-to-structure fire spread during WUI fire incidents. Joseph holds a B.S. in General Engineering from the University of Illinois at Urbana-Champaign and an M.S. in Fire Protection Engineering from the University of Maryland, College Park. *Speaker: Window Failure During Exterior Fire Exposure* *Tuesday, August 11 11:05 – 11:25 am* Structure-to-structure fire spread has been identified as a contributing factor to the devastating amounts of structure loss encountered during wildfire-initiated urban conflagration events. Windows are one potential vulnerability of structures during exterior fire exposures, such as that from an adjacent structure fire. UL Research Institutes' Fire Safety Research Institute has conducted numerous series of experiments to study window failure during exterior fire exposure. Specifically, the research has focused on

	examining the failure of both window pane and window frame assemblies during exterior fire exposure as well as evaluating different methods for protecting windows from an exterior fire exposure. This presentation will provide an overview of the methodology used during these experimental series, describe key findings from the research, and discuss how the results can be utilized to improve building codes, standards, and homeowner guidance documents for communities prone to WUI fire hazards.
	**Kara Noland, MEng** **Stellenbosch University** Kara Annelize van Heerden Noland holds a BEng and MEng degree in Civil Engineering from Stellenbosch University, which she obtained in 2023 and 2025. She is a South African citizen and was introduced to the field of Fire Engineering through one of her professors during her undergraduate studies, Prof. Richard Walls. She decided to pursue her Master's in this field, and while contemplating her research focus, Prof. Walls recommended that she speak with his colleague, Dr. Natalia Flores-Quiroz, who specialises in human behaviour in fire engineering. After their meeting, Kara was excited about the proposed research and its potential contributions to the global understanding of HBiF. The supervisor for her master's project was Dr. Natalia Flores-Quiroz, the co-head of the Fire Engineering Research Unit at Stellenbosch University (FireSUN). FireSUN is advancing fire safety engineering in Africa by cultivating a committed team of researchers and developing postgraduate programs. *Poster: Understanding Human Behaviour in Wildland-Urban Interface Fires: A South African Case Study Using Reflexive Thematic Analysis* Wildland-urban interface (WUI) fires, where natural land meets human development, have gained significant attention. These areas, extending up to a kilometre from communities, face heightened wildfire risks, intensified by climate change. Such threats endanger WUI residents, potentially leading to injuries and fatalities. This presentation shares the results of a project that examined human behaviour during the 2017 Knysna fire, a well-documented South African event. By analysing testimonies from the Knysna Fire Stories book and conducting interviews, the project identified factors influencing behaviour in WUI fires and contributed to understanding human responses in this

	context. The findings provide insights to inform evacuation procedures and safety measures, ultimately aiming to improve protection for vulnerable communities.
	**Katherine Burgum MEng, AIFireE, AIoL** **Delta Fire Engineering** Katherine Burgum is a Senior Fire Engineer at Delta Fire Engineering Ltd. Katherine has recently graduated the University of Central Lancashire with an MEng in Fire Engineering. For her undergraduate and postgraduate dissertations, Katherine focused on an experimental study into wildfire mitigation strategies to be used in the UK. Katherine presented her poster 'An experimental study into the use of fuel breaks as a mitigation method for wildfires in the UK' at the 14th International Symposium on Fire Safety Science in Tsukuba, Japan in 2023 and has a strong interest in the behaviour of wildfires and the effect they can have on people, property, and the environment. Along side working at Delta, Katherine is the Vice President of the Yorkshire and Humberside Branch at the Institution of Fire Engineers where she collaborates and assists with the planning of events and promotion of the branch. *Poster: Field-Based Mapping and Characterisation of Urban and Peri-Urban Vegetation for Wildfire Mitigation in Los Angeles* This paper presents a field-based study conducted in Los Angeles aimed at mapping urban and peri-urban foliage to support wildfire mitigation efforts. The research focuses on identifying and documenting tree species located within designated wildfire zones, with attention to their physical characteristics and ignition potential. Fieldwork methods include on-site vegetation surveys, with geospatial mapping using satellite data, and species classification. The study provides a descriptive inventory of dominant and recurring tree species, analysing traits such as leaf structure, moisture content, bark characteristics, and fuel load density that influence flammability and fire behaviour. By linking species composition to wildfire risk, this research contributes localised ecological data that informs vegetation management, urban planning, and fire prevention strategies. The findings aim to support policymakers, land managers, and emergency planners in reducing wildfire vulnerability through evidence-based foliage assessment and mitigation

	planning, and draws on Delta Fire Engineering's first-hand experience in the 2025 Palisades fire. *Poster: The Burgum–Hart Tunnel: A New Experimental Platform for Firebrand Generation and Transport Studies* This study presents a new experimental apparatus, the Burgum–Hart Tunnel, designed to investigate the production and behaviour of burning brands under forced airflow. The apparatus consists of a 2.4m enclosed tunnel in which a fan-driven flow is applied to a burning fuel load, entraining and propelling released brands. Experiments were conducted to observe brand release dynamics, transport behaviour, and survivability under repeatable flow conditions. The Burgum–Hart Tunnel enables controlled variation of airflow and fuel characteristics, providing a reproducible platform for studying firebrand generation. Results demonstrate that the apparatus can reliably produce burning brands representative of those observed in wildland and wildland–urban interface fires. This work introduces a novel experimental tool that improves understanding of firebrand-driven fire spread and supports development of more accurate predictive models. The work is influenced by Delta Fire Engineering's first-hand experience at the 2025 Palisades fire in Los Angeles and subsequent fieldwork.
	**Kimiko Barrett, PhD** **Alliance for Wildfire Resilience** Kimi is a committed agent of change in how we live with inevitable wildfires. Drawing on the expertise within the broad networks she has built, she has led research of national significance on topical issues such as the true cost of wildfires, the cost of building wildfire-resistant homes, and measuring wildfire impacts through structure loss. Her work has changed the national wildfire narrative and shaped new strategies for engaging communities on wildfire resilience. Before joining the Alliance for Wildfire Resilience, Kimi managed Headwaters Economics' *Community Planning Assistance for Wildfire* program for several years. In that capacity she worked with firefighters, land use and planning staff, government agency

	personnel, and elected officials in more than 80 communities across the country, helping them devise community-driven solutions to reduce wildfire risk and increase community adaptation efforts. Kimi's experience with local-level efforts ensures that her research and policy work addresses real problems on the ground. *Panel #1 - Understanding the Impact of WUI Fires* *Tuesday, August 10, 9:15- 10:15 am*
	**Kuldeep Prasad, PhD** **National Institute of Standards and Technology** Dr. Kuldeep R. Prasad is a mechanical engineer in the Engineered Fire Safety Group of the Fire Research Division (FRD) of the Engineering Laboratory (EL) at the National Institute of Standards and Technology (NIST). Dr. Prasad develops mathematical and numerical models for simulating complex multi-dimensional, multi-phase chemically reacting fluid flows. His research interests include numerical simulation of chemically reacting fluid flows with detailed finite rate kinetics, mathematical and numerical modeling of various physical and chemical processes and large-scale computing using DNS or LES models. He has also developed expertise in using finite element methods for heat transfer and coupling of fire models with structural analysis software. His efforts at NIST has focused on development of multiblock grid embedding models using the domain decomposition techniques, development of the fire-structure interface (FSI) as part of the NIST technical investigation into the collapse of the World Trade Center Towers, development of analytical models for hydrogen release and dispersion in partially enclosed compartments, mathematical modeling of heat and mass transfer through fire fighter protective clothing and numerical simulation of flame spread over cellulosic materials in microgravity. *Poster: Understanding Dynamics of Grassland Fires using Physics-based Models* We investigate the application of full-physics-based model, the Fire Dynamics Simulator (FDS), to understand coupling of spread rate with local atmospheric conditions and

	predict evolution of wildland fire fronts. Simulation results for various ignition line lengths and ambient wind speeds capture the relationship between spread rate and fire width and compared favorably with empirical formulas available in the literature. We investigate the role of Byrams' Convective Number and elucidate the physical processes that result in different fire perimeter shapes under low or high wind conditions.
	**Leslie Marshall, PhD** **SFPE Foundation** Leslie Marshall, PhD is Executive Director of the SFPE Foundation, a global non-profit organization affiliated with the Society of Fire Protection Engineers that supports research and education to improve the scientific understanding of fire and its interaction with the social, natural, and built environments. Dr. Marshall oversees all Foundation programs: facilitating professional awards, student scholarships, and research grants; leading cross-sectoral research collaborations; conducting research workshops and meetings; developing initiatives to support the next generation of fire protection engineers; and disseminating knowledge to advance the field of fire engineering and fire safety science. An affiliate of the Economic and Social Rights Research Group of the University of Connecticut's Human Rights Institute, Dr. Marshall has published multiple policy reports and academic journal articles and frequently speaks on emerging fire safety challenges, resilience and sustainability, economic development, and energy infrastructure and workforce transition. She has consulted for the United Nations Development Programme, Innovations for Poverty Action, the Centre for Women in Governance, and the Lebanese Center for Policy Studies, among others. *Co-Host & Event Moderator* *Opening Remarks* *Tuesday, August 11 8:30 – 8:45 am* *Closing Panel #5 - Creating the Infrastructure for WUI Fire Engineering Research and Collaboration.* *Wednesday, August 12, 4:30 – 5:00 pm*

Linnea Townsend
University of Waterloo

Linnea Townsend is an undergraduate Mechanical Engineering student at the University of Waterloo and a Research Assistant with the University of Waterloo Fire Research Group. Her work focuses on experimental fire testing, fire data analysis, and the development of computational tools to support fire safety and environmental risk research. Linnea's interests are in fire dynamics, materials performance, and data-driven approaches to fire safety engineering.

Linnea has hands-on laboratory experience conducting cone calorimeter tests on materials including adhesives and cross-laminated timber and analyzing fire performance data for research applications. She is also developing Python-based data processing methods, including Fire Weather Index calculations, to support fire risk assessment for Canadian communities. Her work further includes design of custom fire-testing components and the design of sensor enclosures for particulate-matter measurement during large-scale fire experiments.

In parallel with her research, Linnea has professional experience in fire protection and building systems through internships in healthcare facilities and large-scale construction projects. In these roles, she supported the preparation of fire safety drawings and the tracking and resolution of fire protection issues on active construction sites. Her exchange at the Norwegian University of Science and Technology, where she took a course on fire engineering, sparked her interest in the field, particularly in new building technologies and techniques such as those being developed for mass timber.

Poster: Fire Weather Index Correlations to Historical Wildfires in Canadian Indigenous Communities

How do decades of weather data relate to wildfire risk? This presentation summarizes research investigating correlations between Canadian Fire Weather Index (FWI) calculations and historical wildfire occurrence from 1950 to today. The FWI is calculated based on temperature, precipitation, relative humidity, and wind speed. Data was assembled from weather stations based on proximity to more than 10 Indigenous

	communities, who are disproportionately at risk to wildfire damage. This analysis examines trends in peak and extreme FWI conditions and evaluates how well these align temporally with observed wildfire activity across communities, contributing to the development of transferable risk frameworks for remote and rural Canadian communities.
	**Majid Bavandpour, PhD Candidate** **University of Nevada, Reno** Majid Bavandpour is a PhD candidate in Civil and Environmental Engineering at the University of Nevada, Reno, where his research focuses on wildfire data analysis, coupled fire–atmosphere simulation, and probabilistic wildfire risk assessment. His work emphasizes the systematic propagation of uncertainty through nonlinear fire behavior models, with applications to risk-informed decision-making in wildland–urban interface (WUI) fire engineering. Majid has extensive experience developing and implementing physics-based and data-driven models, including wildfire risk frameworks, spotting and pyro-meteor deposition models in WRF-Fire, and large-scale analysis of satellite, radar, and in situ wildfire observations. He has contributed to multiple peer-reviewed journal articles and international conference presentations on wildfire behavior, uncertainty quantification, and fire–atmosphere interactions. Prior to his PhD, Majid worked as a researcher and developer on flood and drought monitoring, early warning systems, and climate prediction tools. He has received multiple academic honors and fellowships recognizing his research excellence. *Poster: Beyond Single-Valued Wildfire Risk: A Computationally Efficient Framework for Systematic Uncertainty Propagation* Wildland–urban interface (WUI) fire engineering increasingly demands risk metrics that move beyond deterministic scenarios and single-valued indicators. We introduce a probabilistic wildfire risk framework that efficiently quantifies the likelihood and severity of wildfire hazard across the spatial domain. The new approach replaces the traditional reliance on large ensembles of stochastic simulations through a deterministic Generalized Unscented Transform (Gen-UT) for uncertainty propagation. The framework propagates uncertainty in ignition, wind, and fuel conditions through nonlinear fire

	behavior models, and can incorporate other sources of uncertainty (e.g., modeling errors) at a practical computational cost. Application of the new approach to the 2018 Camp Fire demonstrates good agreement with observed burn probability patterns while also delivering uncertainty-aware outputs suitable for WUI design, mitigation planning, and performance-based decision making. The approach provides a practical pathway for integrating probabilistic wildfire hazard analysis into fire engineering practice.
	**Mayowa George, PhD** **Kansas State University** Mayowa Boluwatife George, PhD, is a fire safety and wildfire risk researcher specializing in grassland fire behavior, fuel moisture modeling, and fire danger indices. He is currently a doctoral researcher at Kansas State University, where his work focuses on developing localized fire danger assessment tools for grassland and wildland urban interface environments. His research integrates dead fuel moisture content modeling, grass curing dynamics, and weather driven fire risk indicators to support safer prescribed burning and improved wildfire prediction. He has presented his work at international conferences, including the American Society of Agricultural and Biological Engineers and the Association for Fire Ecology, and has authored peer reviewed publications in fire and environmental engineering. He currently serves as Secretary of the Student Association for Fire Ecology (SAFE), where he supports professional development, student engagement, and knowledge exchange within the fire ecology and fire management community. *Poster: Modeling Moisture Factors in a Grassland Fire Danger Index for Prescribed Fire Management in the Great Plains* Wildland–urban interface (WUI) fire engineering increasingly demands risk metrics that move beyond deterministic scenarios and single-valued indicators. We introduce a probabilistic wildfire risk framework that efficiently quantifies the likelihood and severity of wildfire hazard across the spatial domain. The new approach replaces the traditional reliance on large ensembles of stochastic simulations through a deterministic Generalized Unscented Transform (Gen-UT) for uncertainty propagation. The framework propagates uncertainty in ignition, wind, and fuel conditions through nonlinear fire behavior models, and can incorporate other sources of uncertainty (e.g., modeling errors)

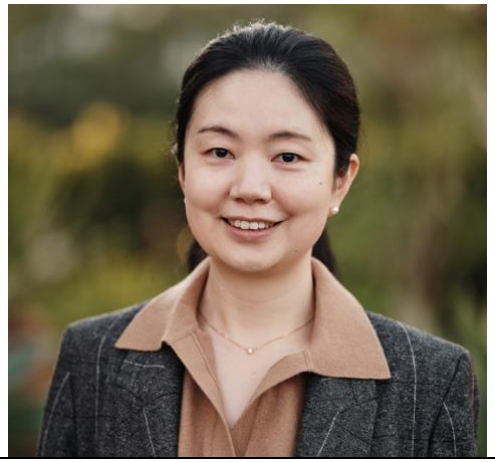
	at a practical computational cost. Application of the new approach to the 2018 Camp Fire demonstrates good agreement with observed burn probability patterns while also delivering uncertainty-aware outputs suitable for WUI design, mitigation planning, and performance-based decision making. The approach provides a practical pathway for integrating probabilistic wildfire hazard analysis into fire engineering practice.
	**Nathan B. Wittasek, PE, CFEI, LEED AP** **Simpson Gumpertz and Heger** Nate Wittasek is a Los Angeles-based fire protection engineer with over 25 years of global experience. He brings a pragmatic, creative approach to clients, specializing in performance-based design to develop flexible solutions where prescriptive codes fall short. His diverse technical expertise encompasses wildfire mitigation, hazardous materials management, code consulting, and forensic analysis. Leveraging a unique background as a firefighter, researcher, and educator at UCLA and Cal Poly Pomona, Nate is uniquely positioned to handle both proactive engineering challenges and reactive failure investigations. Nate is an active member of NFPA and SFPE, serving on technical committees addressing wildland fire protection, tall buildings, life safety systems, and smoke movement. *Panel #2 - How Can Engineers Help Drive Better Decision-Making in WUI Communities?* *Tuesday, August 11, 2:00 – 2:45 pm*
	Pascale Vacca, PhD **Centre for Technological Risk Studies, Universitat Politècnica de Catalunya** Dr. Pascale Vacca is a postdoctoral researcher and assistant lecturer at the Chemical Engineering Department of the Universitat Politècnica de Catalunya (UPC), where she is a member of the Centre for Technological Risk Studies (CERTEC). After completing the International Masters in Fire Safety Engineering, she worked as a fire safety consultant at

	Jensen Hughes Belgium, before starting her PhD on Wildland-Urban Interface (WUI) fires at UPC. Her research interests are focused on the assessment of risk and vulnerability of assets located at the WUI and the Wildland-Industrial Interface. She investigates wildfire impact and its consequences by means of a performance-based design approach and the use of CFD tools. At UPC, she is involved in the teaching of fire science and risk and safety related courses both at Bachelor's and Master's levels. She is a co-leader of the SFPE Foundation's WUI Working Group. *Speaker: Contributing to WUI community fire preparedness: interdisciplinary activities of the FIREPRIME project* *Tuesday, August 11, 5:55 – 6:15 pm* This presentation explores how interdisciplinary activities can contribute to build WUI community fire emergency preparedness drawing on the experience of the Spanish pilot of the FIREPRIME project. The project engaged residents of WUI areas located within the Collserola Natural Parc (Catalonia, Spain) with the aim of improving their preparedness through collaboration between fire safety engineering expertise, social science analysis, professional knowledge from firefighters and Civil Protection units. Several participatory activities were conducted throughout the project: a testing of a smartphone app which outputs the risk score combining local hazard conditions with the vulnerability of the home and its surroundings, and two Preparedness Days. Together, these activities demonstrate the value of interdisciplinary, community-centred approaches for strengthening wildfire emergency preparedness in WUI areas.
	Paulina Mejia **Jensen Hughes** Paulina is a consultant on the wildfire risk mitigation team working out of the Southern California region of Jensen Hughes. Paulina holds a master's degree in public policy with an emphasis on environmental policy. She has over seven years of experience in wildfire planning and outreach, which includes community outreach and engagement, education and program development, and stakeholder coordination and engagement. She currently manages and contributes to a wide array of wildfire risk mitigation projects which include

risk assessments, planning and research for utilities, communities, fire safe councils, and government agencies across California and other fire prone regions in North America.

Poster: Beyond Technical Analysis - Lessons in Community and Stakeholder Engagement from a Regional Community Wildfire Protection Plan (CWPP)

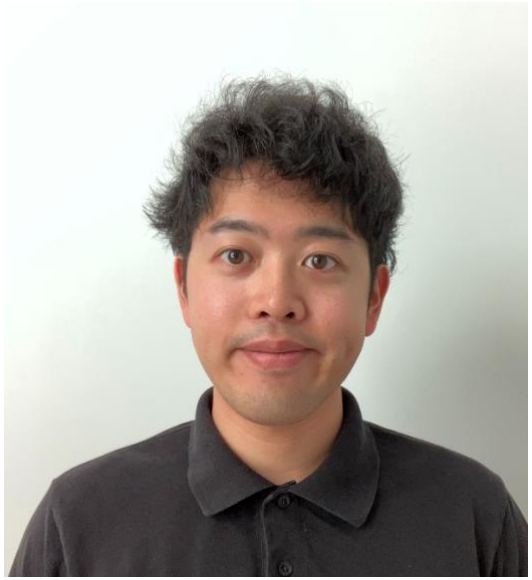
Recent wildfire events, including the 2020 Bobcat Fire, 2024 Bridge Fire, and 2025 Eaton Fire, affecting the San Gabriel Valley, have underscored the need for regional approaches to wildfire resilience that extend beyond technical analysis alone. This presentation draws from the development of a Regional Community Wildfire Protection Plan (CWPP) for the San Gabriel Valley Council of Governments (SGVCOG), highlighting how effective community and stakeholder engagement is essential to translating WUI fire engineering into meaningful action. While wildfire hazard and risk analyses provided the baseline foundation of the project, success depended on facilitation, risk communication, and coordination across multiple jurisdictions and stakeholder groups. Through a cohesive engagement process such as public workshops, stakeholder and technical advisory group coordination, the project team worked to make complex wildfire hazards and risk information accessible, credible, and actionable. The presentation shares lessons learned and practical strategies for fire protection engineers supporting community-scale wildfire resilience.

	**Pete Abbate, FCAS, MAAA** **Milliman** Pete Abbate, FCAS, MAAA, is a Consulting Actuary with Milliman. Pete has nearly a decade of experience developing actuarially sound property & casualty insurance rates for various programs, including property and catastrophe-exposed property. He leads Milliman's efforts to quantify wildfire suppression capabilities by developing a WUI Fire Protection Score. Pete has presented about wildfire risk at cross-discipline events, representing the insurance industry's perspective on this emerging issue. *Keynote #2 - Insurance Approaches to WUI Risk Assessment and Modeling: Research Gaps and Opportunities for Engineers* *Tuesday, August 11 1:30 – 2:00 pm*
	**Qianru Guo, PhD, PE** **Simpson Gumpertz and Heger** Qianru Guo holds a PhD in Structural Engineering from the University of Michigan. She brings more than ten years of research and industry experience developing technical code compliance and fire protection strategies for a wide range of commercial and public projects. She has deep expertise in performance-based design, including smoke control analysis, timed egress analysis, and structural fire engineering analysis. Qianru is passionate about contributing to professional committees and building code development. She is a co-leader of the SFPE Foundation's WUI Working Group Research Module. In addition, she serves on the NFPA Technical Committees for NFPA 101 and NFPA 5000, ASCE technical committees (SEI Fire Protection, Performance-Based Design,

	and the Energy Division Fire Protection Committee), and the 2023 New York City Code Revision Committee." She is a co-leader of the SFPE Foundation's WUI Working Group Research Module. *Panel #3 - WUI Education for Engineers* *Wednesday, August 12, 1:15 – 2:00 pm*
	**Rachel Fields, EIT** **Thornton Tomasetti** Rachel Fields earned her MS in Civil Engineering from Oregon State University and her BS in Civil Engineering from Gonzaga University. Rachel is an engineer at Thornton Tomasetti, working on design as well as investigation of engineering problems and failures. In her master's research, Rachel performed a meta-analysis of existing literature. The studies analyzed suggested characteristics at multiple spatial scales influence housing survivability, including community design, resulting in differing priorities between WUI community types. While inconsistencies exist across post-wildfire observational studies, there are mitigation opportunities that can effectively improve the likelihood of housing survivability, particularly within the home ignition zone. A benchmarked modeling methodology was developed to perform fire propagation modeling for a WUI community. From the transmission pathways analysis, she helped identify high priority intervention and mitigation locations. Transmission probabilities and parcel-level ownership highlighted the complex structures that make up high transmission probability categories *Speaker: Wildfire Exposure of Community Infrastructure: A Scenario Analysis for Ashland, Oregon* *Tuesday, August 11, 3:25 – 3:45 pm* Current wildfire scenario modeling typically considers singular fire events to determine exposure of houses. However, due to the anthropogenic nature of fire and the importance of critical infrastructure within community recovery, we need to consider a range of ignition locations in addition to examining the downstream exposure effects on the infrastructure that will aid in the recovery of communities. This presentation summarizes

	multi-disciplinary modeling efforts to develop a framework that can consider historical ignition locations coupled with benchmarked modeling methodologies to explore hazard exposures for community critical infrastructure.
	**Rebecca Harned** **UL Research Institutes' Fire Safety Research Institute** Rebecca Harned is a principal research scientist for the Fire Safety Research Institute, part of UL Research Institutes. In her role, Rebecca will support the National Emergency Response Information System by developing a comprehensive National Fire Risk Index that provides a consistent framework to measure various types of fire risks at the most local level, on a nationwide scale. Rebecca holds a Bachelor of Science degree in biology and a Master's degree in international peace and conflict studies. She possesses over 20 years of experience working with the fire service and emergency management community at the intersection of technology, science, and policy. Rebecca most recently served as the advisor on technology and data modernization to the US Fire Administration (USFA) within the Federal Emergency Management Agency (FEMA). She has also served in various senior leadership and management capacities within FEMA, the International Association of Fire Chiefs (IAFC), the National Alliance for Public Safety GIS (NAPSG) Foundation, and the National Association of State Fire Marshals, among other organizations. *Speaker: Benchmarking Current Capabilities and Gaps in Wildfire Risk Modeling Science and Technology: Findings from the Wildfire Risk Modeling Exercise* *Wednesday, August 12 9:50 – 10:10 am* As destructive wildfires increasingly threaten communities and the built environment, our ability to consistently measure, understand, and predict wildfire risk remains limited. Effectively measuring wildfire risk is the very foundation needed to guide effective mitigation investments and response operations. At this critical moment, it is essential to better understand the distinct strengths of existing wildfire risk models and how they can be integrated to deliver more precise, actionable intelligence.

	This session offers a deep dive into the scientific and technological insights from the first-ever Wildfire Risk Modeling Exercise conducted in early 2026. More than 40 organizations worldwide participated, bringing a diverse range of modeling approaches—from statistical and stochastic methods to semi-physics and AI-driven models. The session will present benchmarking results across these approaches, highlight opportunities for model ensembles, and examine key gaps in current modeling capabilities. Attention will be given to how well existing methods capture the complex dynamics of wildfire in wildland–urban interface (WUI) transition zones and the built environment.
	**Ruiqing "Ryan" Shen, PhD** **Oklahoma State University** Dr. Ruiqing “Ryan” Shen is an Assistant Professor in Fire Protection & Safety Engineering Technology at Oklahoma State University. Driven by a vision to safeguard people, communities, and the environment, Dr. Shen’s research focuses on: Developing eco-friendly fire-safe materials; Designing cost-effective engineering safety and health strategies; Integrating new technologies into chemical process safety; Enhancing fire safety of energy storage systems; and Improving occupational health and safety. *Poster: Formation and Visualization of Wildfire-Induced Soil Water Repellency in Laboratory-Scale Experiments* Soil water repellency (SWR) arises from hydrophobic-layer formation that reduces the soil’s ability to absorb water, accelerating rainfall conversion to surface runoff and increasing risks of erosion and flooding. Wildfire is a particularly strong driver of SWR, enhancing both the persistence and severity of soil hydrophobicity. However, many studies rely on muffle-furnace heating under uniform, isothermal conditions that fail to represent the steep temperature gradients and spatially heterogeneous heating produced during wildfires. To better capture wildfire-relevant processes and link microscale wettability changes to macroscale hydrologic responses, this study will develop an experimental framework that complements conventional approaches. It will evaluate top-down heating–induced temperature gradients and associated heat-driven transport, the influence of soil organic matter on hydrophobic-layer depth and continuity, and the role of initial soil moisture in controlling formation thresholds and post-heating stability.

	This approach will advance mechanistic understanding and improve predictions of post-wildfire runoff and soil erosion hazards.
	**Ryota Yagi, MEng, PhD Candidate** **University of Nevada, Reno** Ryota Yagi is a PhD student in Computer Science and Engineering at the University of Nevada, Reno, where his research focuses on wildfire monitoring and prediction using computer vision and remote sensing. His current work explores spatial super-resolution of high-temporal-resolution GOES satellite observations to better characterize wildfire dynamics, intensity, and progression. Mr. Yagi received his M.Eng. and B.Eng. degrees from the University of Tokyo in Aeronautics and Astronautics, where he specialized in satellite image analysis, cross-view geo-localization, and statistical image alignment. His background includes extensive experience with satellite imagery, UAV-based sensing, and efficient deep learning models. He has published in venues spanning remote sensing, computer vision, and applied machine learning, and has participated in international research collaborations and internships in both academia and industry. *Speaker: Near-Real-Time Monitoring of WUI Fires Using Super-Resolved GOES Imagery* *Wednesday, August 12, 9:30 – 9:50 am* Near-real-time monitoring of fire progression near the wildland-urban interface (WUI) is critical for timely response, as it enables wide-area awareness of fire conditions to protect life and property. Polar-orbiting sensors such as the Visible Infrared Imaging Radiometer Suite (VIIRS) offer high spatial resolution but lack the temporal frequency required for near-real-time fire monitoring. To address this limitation, we apply deep learning-based super-resolution to enhance observations from the Geostationary Operational Environmental Satellite (GOES). We construct a new large-scale paired GOES-VIIRS dataset comprising over 1,000 fire events between 2018 and 2024, including both fire and non-fire regions. Using this dataset, well established super-resolution models in the computer vision community are applied to WUI fire monitoring to enhance the spatial resolution of GOES observations from 2 km to 375 m. Our work clarifies the

	performance and limitations achievable with current deep learning-based super-resolution models for near-real-time WUI fire monitoring.
	**Sara Cristina Rodrigues Alexandre, MSc, Architect (European Fire Safety Technician Programme – CFPA-Europe, in progress**) **SOLIDCOLUMN** Sara Cristina Rodrigues Alexandre is an architect and fire safety and civil protection consultant with extensive professional experience in the design, implementation, and assessment of fire safety and self-protection measures in regulated and high-risk contexts. She is the founder and managing director of SOLIDCOLUMN, an engineering and consulting firm established in 2016, where she coordinates multidisciplinary projects in architecture, fire safety, occupational safety, and risk prevention. She has been professionally involved in fire safety in buildings since 2009 and is registered with the Portuguese Architects' Association and the National Authority for Emergency and Civil Protection. She is currently completing the European Fire Safety Technician Programme awarded by CFPA-Europe. Alongside her professional practice, she is completing a Master's degree in Risk and Civil Protection, with research focused on community prevention, risk perception, and the design of communication and prevention frameworks for communities exposed to natural hazards. Her work bridges regulatory fire safety practice, architectural design, and community-level prevention strategies, with growing focus on wildland–urban interface contexts. She is a member of the Society of Fire Protection Engineers (SFPE) and APSEI. She is a co-leader of the SFPE Foundation's WUI Working Group Research Module *Poster: Beyond Building-Centric Fire Safety: Practice-Based Insights on Community Preparedness and Risk Prevention in WUI Contexts* Fire safety and risk prevention frameworks are frequently structured around building-level compliance and prescriptive self-protection measures. While these approaches are effective at the individual asset scale, they often prove insufficient to address community-level risk in complex hazard environments such as the wildland–urban

	interface (WUI). Drawing on professional practice in architecture, fire safety, and civil protection, as well as research on community prevention and risk perception, this contribution examines the gap between formal regulatory compliance and effective community preparedness. The work highlights how prevention strategies tend to prioritize documentation, plans, and informational actions, with limited evidence of sustained mechanisms that reduce exposure, strengthen collective readiness, or ensure continuity of essential services. By reframing fire safety practice through a prevention-oriented and community-aware lens, the presentation supports the development of integrated approaches that bridge building-focused safety, territorial context, and community-level preparedness in WUI settings.
	**Serdar Selamet, PhD** **Exponent and Stanford University** Dr. Selamet is also an Adjunct Lecturer in the Department of Civil and Environmental Engineering at Stanford University, where he teaches graduate-level fire engineering and supervises research on structural fire behavior and performance-based design. His research focuses on physically motivated modeling of fire exposure, ignition vulnerability, and cascading structure-to-structure fire spread at building, parcel, and community scales. He is actively involved in interdisciplinary WUI fire engineering initiatives, post-fire forensic investigations, and the development of engineering-based vulnerability indices to support risk-informed mitigation and resilience planning. Dr. Selamet collaborates with academic, industry, and public-sector partners on applied wildfire resilience research and consulting efforts. He holds a PhD in civil engineering and is a Certified Fire and Explosion Investigator (CFEI). He is a co-leader of the SFPE Foundation's WUI Working Group Research Module. *Panel #3 - WUI Education for Engineers* *Wednesday, August 12, 1:15 – 2:00 pm*

Shuna Ni, PhD
University of Maryland, College Park

Dr. Shuna Ni is an Assistant Professor of Fire Protection Engineering at the University of Maryland, College Park. Ni's research focuses on fire forensics, fire resilience of wildland-urban interface communities, structural fire engineering, impact of fire on civil infrastructure, and fire safety of tall mass-timber buildings. Her research has been funded by the National Science Foundation, National Institute of Justice, Fire Protection Research Foundation, University Transportation Centers, BLM-National Interagency Fire Center, Grand Challenges Grants Program at the University of Maryland, and industrial partners.

Poster: Empirical Fragility Surfaces for Wildland–Urban Interface Structure Damage Based on Site and Building Characteristics

Wildland–urban interface wildfires threaten built environments, motivating fragility-based approaches for risk assessment and damage estimation. However, defining appropriate intensity measures for wildfire-exposed structures remains challenging. Post-fire damage datasets typically lack building-specific heat exposure information, and experimental measurements of heat exposure are sparse and costly. Moreover, current wildfire models cannot reliably predict building-scale heat exposure or structural response under external fire conditions. Consequently, heat exposure is not a practical intensity measure for wildfire fragility analysis, motivating the use of non-thermal proxy intensity measures. This study develops an empirical fragility framework using bivariate fragility surfaces defined by a Site Index (SI) and a Building Index (BI). Using available wildfire damage data, observed damage probabilities are estimated and normalized by regional wildfire ignition probability and modeled as functions of SI and BI using nonparametric kernel density estimation. The resulting fragility surfaces provide a quantitative basis for risk-informed mitigation and wildfire-resilient building design.

	Poster: From Practice to Policy: Examining Wildfire Hazard Mitigation & Regulatory Frameworks Wildfire mitigation guidance is abundant, spanning peer-reviewed research, agency and community programs, and insurer recommendations, yet adoption into codes and policy remains uneven. This presentation describes an evidence-to-policy mapping effort that couples (1) a PRISMA-based systematic review of wildfire hazard mitigation literature and programs with (2) a structured review of model codes and standards (e.g., NFPA 1140/1144 and the ICC International Wildland-Urban Interface Code) plus selected state and local requirements. Findings are synthesized across home and property protection, education and outreach, community and land-use planning, and policy, economics, and insurance. A weighted gap-ranking framework (evidence strength, feasibility, cost, and insurer/regulator alignment) then identifies the most consequential translation gaps and the most actionable opportunities for engineers, AHJs, and policymakers to close them.
	**Steve Kerber, PhD** **UL Research Institutes' Fire Safety Research Institute** Dr. Steve Kerber is vice president and executive director of the Fire Safety Research Institute (FSRI) at UL Research Institutes. He leads a fire safety research team dedicated to addressing the world's unresolved fire safety risks and emerging dangers to reduce death, injury, and loss from fire. He is on the Board of Governors of the SFPE Foundation. *Co-host* *Opening Remarks* *Tuesday, August 11 8:30 – 8:45 am* *Keynote #1 - What Is the WUI Fire Problem?* *Tuesday, August 11, 8:45 – 9:15 am*

	Closing Panel #5 - Creating the Infrastructure for WUI Fire Engineering Research and Collaboration. *Wednesday, August 12, 4:30 – 5:00 pm*
	**Tanmay Vora, PhD Candidate** **University of Michigan** Tanmay is a third year PhD candidate in civil engineering at the University of Michigan. He earned his bachelor's from University of Mumbai and master's from the University of Michigan both in civil engineering. His research focuses on developing community-scale simulations for modeling fire spread in the Wildland-Urban Interface (WUI). In his free time he likes to travel, cook, watch horror movies, and documentaries. *Speaker: Multi-level Framework to Model Wildfires at the Wildland-Urban Interface: Case Study* *Wednesday, August 12, 11:40 – 12:00 pm* The recent Eaton and Palisades fires caused massive destruction to homes and other buildings. This abstract introduces a multi-level framework for modeling wildfires at the wildland-urban interface (WUI). For the purposes of modeling accurately and efficiently, the WUI is divided into four nested domains–wildland, transition, surrounding community(ies), and neighborhood(s) of interest–each treated with increasing modeling fidelity. Fire spread in the wildland, transition, and urban domains is modeled using SWUIFT coupled with WRF-Fire, an approach that was validated against the 2021 Marshall Fire (Szasdi-Bardales et al. 2025). For the neighborhood(s) of interest, where fire spread from structure-to-structure or by connective fuels is of interest, a computational fluid dynamics (CFD) approach using a Euler-Euler multiphase model is employed. The proposed framework represents a significant advancement in the modeling of fire spread in urban areas using a physics-based approach.

William Koffel, PE
Koffel Associates and University of Maryland, College Park

Bill Koffel is Sr. Director, Special Projects of Koffel Associates, a fire protection and life safety engineering design and consulting firm, and Clinical Associate Professor, Department of Fire Protection Engineering, University of Maryland. Bill is active in the development process of the industry's governing codes, standards and design guidelines including International Code Council (ICC), NFPA, Society of Fire Protection Engineers (SFPE) and Underwriters Laboratory (UL). He is a member of many NFPA Technical Committees and ICC committees.

A former code official with the Maryland State Fire Marshal's Office, he is a Past President of the SFPE.

He is a co-leader of the SFPE Foundation's WUI Working Group Education Module.

Panel #4 - WUI Working Group Module Updates
Wednesday August 12, 2:00 – 2:30 pm

William Skene, PE
FM

William Skene, PE is an Assistant Vice President and Senior Staff Engineering Specialist in the Chief Engineer's Group at FM. He has been with FM for 15 years and is responsible for FM's Property Loss Prevention Data Sheets on wildfire risk mitigation, maximum foreseeable loss, and passive fire safety. He also serves on several NFPA technical committees and holds roles as a Fire Marshal and Fire Chief in Woodstock, CT, bringing practical emergency management experience to his technical expertise.

Speaker: Mitigating Wildfire Risk to Structures: Best Practices from FM Data Sheet 9-19
Tuesday, August 11, 11:25 – 11:45 am

The purpose of this presentation is to inform stakeholders on the best practices outlined in FM Data Sheet 9-19 to prepare for, mitigate, and recover from wildfire risks to

	structures. With increasing wildfire frequency and severity globally, understanding these guidelines is critical for safeguarding assets and ensuring business continuity.
	**Yifei Ding, PhD Candidate** **The Hong Kong Polytechnic University** Yifei is a PhD candidate majoring in fire safety engineering, specializing in AI-based smart firefighting and WUI fire risk assessment. He has published 19 papers in Fire Safety Journal, Journal of Building Engineering, Process Safety and Environment Protection, Engineering Applications of Artificial Intelligence, and Journal of Forestry Research, and as reviewer of Fire Technology, International Journal of Wildland Fire. Yifei hosted an NFPA student research project about building fuel load survey. He also received 2025 SFPE student research grants to further study structural fuel load and damage forecast in WUI fire. *Poster: Parcel-Scale Fire Damage Risk Assessment in Wildland Urban Interface* A novel fire risk assessment model for evaluating house fuel load and forecasting structural damage in Wildland-Urban Interface (WUI) fires is developed. The overall methodology consists of three key steps: (1) collecting a database of structures and corresponding environmental information and images in WUI communities, (2) developing a house attribute recognition method based on pattern recognition models to calculate the structural fuel load and indoor fuel load, and (3) building a nonlinear correlation between the extent of structural damage and multiple parcel-scale factors, e.g. vegetation coverage, fuel load, and distance to nearest combustibles.