

Instructors Overview

Chief Steve Brooks, Lacey Fire Department

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Steve Brooks is in his 32nd year of fire and emergency medical services and currently serves as the Fire Chief of the Lacey Fire District (LFD) where he has worked for 19 years. LFD serves a population of approximately 108,000 residents and the agency responds to over 17,000 requests for 911 service annually. Prior to moving to Washington State, Steve began his fire and EMS career in Tennessee where he served in the City of Oak Ridge Fire Department. Chief Brooks currently serves as President of the Washington Fire Chiefs Association and of the Thurston County Fire Chiefs. He previously served on the Board of the Western Fire Chiefs Association as the Washington State representative.

Isidor Buchmann, Cadex Electronics Inc.

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Founder and CEO of Cadex Electronics Inc. For three decades, Buchmann has studied the behavior of rechargeable batteries in practical, everyday applications, has written award-winning articles including the best-selling book "Batteries in a Portable World," which is now in its fourth edition, and has spoken at conferences around the world. Buchmann is also the author of www.BatteryUniversity.com, an educational information website that provides practical information on batteries for the busy professionals' design engineer, student, and everyday battery users.

Captain Hunter Clare, Peoria Fire Medical Department, Arizona

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Captain/Paramedic/Special Operations Team Member that has worked for the Peoria Fire Medical Department for the past twenty years and currently serve as the Department training captain. Cpt. Clare was a part of establishing the grant that created the Peoria Fire Medical Hazmat Team back in 2007 and is a charter member of the team. Up until 2019, he served as a Captain for the hazmat team stationed out of firehouse 193 in Peoria, Arizona but was injured along with his crew in the Surprise Arizona BESS explosion. The Peoria Fire Medical Department is a part of the Phoenix Regional Automatic Aid System. Besides leading the training for their organization, he also assists in training special operations for the entity of the Phoenix Automatic Aid System and at the five Regional Academies. He also serves on various committees with the IAFF and as a hazmat instructor and burn coordinator, while being the Union President for Local 493 Peoria Chapter

Lathan DeLeo, Airport Towing

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Lathan DeLeo has worked in the towing and recovery industry in Washington state for over 12 years and serves as a manager with Airport Towing. His home base is near Burien, serving the greater Seattle and central sound area most commonly but Lathan's call to duty also requires traveling to neighboring states for his work. It didn't take long to see that he had found his true calling as a Tow Operator and quickly gained experience in all classes of tow trucks. With the towing industry statistically ranking in the top three deadliest jobs in America, expertise is a must to ensure that a tow operator makes it home each night at the end of their shift. Lathan takes great pride in ensuring that he is well-educated on the tools of his trade; from his extensive knowledge of the equipment and industry standards required for the towing and recovery industry, to being the certified expert in the electric vehicle field for the Airport Towing team and beyond. Lathan's passion for his work in the towing

industry goes hand and hand with his commitment to service for his customers and to continued education to expand his professional mastery. The Towing and Recovery Association of Washington's education program motto is "a good tow operator is not born, they are trained" and Lathan is proof that an excellent operator can be both. He was born to do this, and Lathan sets a high standard for himself and his fellow towing brotherhood to continue to strive for that excellence, making him an asset to his employer and team and to the motoring public of Washington and beyond.

Mark Furnish, WA Department of Ecology, Dangerous Waste Coordinator

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Graduated from Central Washington University with a BS in Chemistry and a BS in Aerospace Mgmt. Started at Burlington Environmental as a Field Chemist in 1992. Became the Contract Mgr. for Burlington Environmental in 1994, managing disposal of waste from the United States Antarctic Program. In 2001, he became the Waste Operations Manager and HazMat Spill Response Coordinator for the United States Antarctic Program. Left the program in 2016 and in 2017 joined the Washington Department of Ecology as the TSD Permit Writer. Earlier this year, he took his current position with Ecology (but had been doing that work before the position was created).

Captain Chris Greene, SFD Ret., Energy Hazard Response, SME

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Recently retired Seattle Fire Captain Chris Greene, retired in June of 2023 after 29+ years of service. Cpt. Greene spent the last 9 years of his career building Seattle Fire Department's Energy Response program/specialty team. This specialty team is responsible for addressing all energy related emergencies in the city of Seattle, Washington. The team was created in collaboration with Seattle City Light - the energy provider for Seattle. To his knowledge, it is the only Fire Department specialty team like it in the world. Cpt. Green spent 5 years traveling around the United States attempting to gather insight and consistent practices for recognizing and operating around energy driven emergencies...what he discovered was a massive training gap for the fire service. Closing this gap became his project for the final 9 years of his tenure with the Seattle Fire Department. Today he offers energy hazard training across the US. He works with FSRI, NFPA, IAFF, and the ICC on all energy hazards. Cpt. Green is an author for Fire Engineering magazine and a perennial instructor at FDIC.

Greg Jenkins, U.S. EPA Region 9 Contractor-Maui Wildfire Response

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Greg Jenkins is a U.S. EPA Region 9 Contractor for the Maui Wildfire Response who served as the SME that developed and managed the removal, render safe, and transportation for reclamation process for all lithium-ion batteries in association with fire damaged residential and commercial properties and electric/hybrid vehicles. After a 32+ year fire service career, Greg retired from the Maui County Fire Department as a Captain and Specialist on their HazMat Response Company. Upon retirement from the fire service, Greg went to work for Matson Navigation as a HazMat Specialist on the Dangerous Goods Team within the Safety, Quality, Environment and Security Division. At Matson, Greg was responsible for daily audits of shipping papers for hazardous cargo and was special assigned to hazmat and fire incident emergency management on Matson vessels and shoreside facilities, lithium-ion battery risk mitigation and training, SME on the loading and discharge of explosives, and Lithium-ion battery SME to the World Shipping Council and other government and non-government organizations. Greg is the Founder and CEO of High Hazard Management, LLC, a firm specializing in consulting and training on HazMat response, management, and transportation-shipping; disaster response; Lithium-ion battery risk mitigation; community outreach; and GIS mapping. Greg earned a BA in Public Administration from the University of Hawaii.

Eli King, WA Department of Commerce, Director of Energy Resilience & Emergency Management Office

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Elizabeth “Eli” King is the Director for the Energy Resilience and Emergency Management Office under the Washington State Department of Commerce. Mrs. King oversees energy emergency operations, resilience & mitigation planning, and energy cybersecurity for petroleum, electricity, natural gas, and alternative fuels. During an energy supply shortage, Eli is responsible for coordinating restoration priorities with government, energy sector partners, neighboring states, the Governor’s Office, and Joint Legislative Committee on Energy Supply and Conservation. Mrs. King is an internationally Certified Emergency Manager (CEM) and was appointed to serve on the National Wildland Fire Mitigation and Management Commission representing the energy sector. In addition to her daily responsibilities, Eli is an instructor for FEMA’s Emergency Management Institute and serves as the President for the International Association of Emergency Managers in Region 10 which spans Idaho, Oregon, Washington, and Alaska. She is certified to teach FEMA’s Incident Command System (ICS), Master Exercise Practitioner Program, Homeland Security Exercise Evaluation Program (HSEEP), Community Emergency Response Team (CERT), Situational Awareness and Common Operating Picture (SA-COP), and the Integrated Emergency Management Course (IEMC) Program.

Captain Matt Lujan, Seattle FD, Team Leader Energy Response Team

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Captain Seattle Fire Department, Engine Company 25, Team Leader Energy Response Team

Captain Jeremy Morasch, Spokane FD

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Jeremy Morasch is a Captain with the Spokane Fire Department and just completed a year and a half stint as the department’s Training Captain.

Captain Chris Pfaff, West Pierce Fire and Rescue

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Chris Pfaff is a Prevention officer (Code enforcement, Fire Investigations), and former suppression responder with 15 years on our technical rescue engine with West Pierce Fire & Rescue out of Lakewood, WA. In his years as a firefighter, Chris was a Hazmat Technician and team lead, Rescue Technician, and officer with his agency. He is the lead instructor for www.HazmatAndRescue.com, an online based instruction platform for hazmat instruction for responders worldwide. Chris has presented at multiple Hazmat conferences, including the IAFC Hazmat Conference, Houston Hotzone, and the Florida Hazmat Symposium. Over the past few years, Chris has worked with energy responders to understand the hazard of Lithium-Ion batteries for the public and responders for the past few years, with the support of Capt. Chris Greene (Ret.) of Seattle Fire Dept's Energy Response Team, and has worked with the ATF, IAAI, FSRI, the IFC and other agencies in the creation of Lithium-Ion battery training and code creation. From this knowledge, he has created various presentations on the hazards of Lithium-Ion batteries to include code enforcement, fire investigation, community risk reduction & fire response.

C. Todd Smith, ATF, SSA/CES/CFI

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C. "Todd" Smith is a Senior Special Agent (SA), Certified Fire Investigator, and Certified Explosives Specialist with the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) assigned to the Seattle Arson & Explosives Group (based in Spokane). SA Smith is also a part-time member of the ATF National Response Team (NRT) investigating complex fire and explosion incidents. SA Smith has been an instructor at the ATF National Center for Explosives Training and Research, the National Fire Academy, and has provided fire and explosion related training on behalf of ATF to hundreds of fire, police, and military personnel covering explosion dynamics, post-blast investigation, criminal investigation, forensics, wildland and structure fire investigation, exploding targets and wildland fire (published), homemade explosives and devices, and his current obsession is lithium-ion batteries. SA Smith began his law enforcement career 29 years ago as a police officer in Knoxville, TN, and he will soon finish the journey as a proud arsons and explosives nerd who would love to talk to you about the toxicity of lithium-ion batteries.

Bob Swaim, Founder: How It Broke

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Internationally recognized expert in lithium batteries and power systems, both in aviation and motor vehicles. Starting in aviation as a teenager and licensed airplane mechanic, he later worked for aerospace firms around the world as an engineer until becoming an accident investigator at the National Transportation Safety Board from 1988 until retirement almost 32 years later. At retirement Mr. Swaim achieved the unique position of being the NTSB's National Resource Specialist for Aviation Systems Engineering. He also served as Accredited Representative of the United States for international investigations, Investigator in Charge for domestic investigations, aviation cyber-security expert, and other roles as required. Since leaving the NTSB, Mr. Swaim has continued to teach accident investigation classes at the NTSB Academy, started the consulting group HowItBroke.com, and is an ongoing member of the Society of Automotive Engineers (SAE J2990) Hybrid and EV First and Second Responder Task Force. With the rapidly increasing number of EVs around the world, Mr. Swaim developed a hands-on firefighter class which is based in what has and has not worked. The class is based in ISO-17840, which is the standard recommended by the NTSB to be used for emergency response guides and material. (NTSB Safety Recommendations H-20-30 and H-20-32)

Sean Thompson, PhD, WA Department of Ecology, Eastside Law Enforcement & Dangerous Waste Coordinator

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BS in Biology & Environmental Chemistry from Texas A&M University, Corpus Christi. MS in Molecular and Environmental Plant Science from Texas A&M University, College Station. PhD in Plant Physiology and Remote Sensing from Texas A&M University, College Station. Graduate and Post Graduate work internationally focused on use of remote sensing technologies to characterize environmental influences on plant genetics. Started with Washington State Department of Ecology in 2015. Current role as Eastside Law Enforcement & Dangerous Waste Coordinator focuses on supporting law enforcement and first responders in HAZMAT identification, mitigation, containment, and disposal to limit environmental impacts.

Emily Wade, Director of The Towing and Recovery Association of Washington

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Emily Wade serves as the Director for the Towing and Recovery Association of Washington. Over a decade ago, her professional career took her on a new path and led her into the towing and recovery field. Her commitment to her employer and determination to excel in a new industry required her to educate herself on all aspects of Washington's rules that govern and regulate the towing industry in our state. As time went on, Emily's involvement in "all things towing" expanded and she became an active member within the state's towing association, serving on the Board of Directors as a District Chair, Committee Member, avid volunteer, and graduating to serving as Member-at-Large. When the position of Director opened, Emily stepped in as a volunteer for the first year and, following the encouragement of her industry peers, she took on the position in its full capacity in 2020. She believes it is an honor to serve her fellow members and the Towing and Recovery Association of Washington and in being recognized as a leader in industry by WSDOT and WSP. There are not a lot of facets Emily does not have a hand in including member support and daily operations, legislative efforts and advocacy, and serving as an Education Trainer for Washington Specific training, to name a few. Of course, she can still be found driving a tow truck to and from the scene of a roadside emergency on occasion. There is a great deal of responsibility that comes with the position of Director for the longest-continually operated towing association in the nation. Emily has a tremendous amount of pride in what she does and the association she does it for and takes a great deal of ownership in representing her fellow tow operators as the Director of the Towing and Recovery Association of Washington, the undisputed voice for the industry in our state for over 65 years.

Megan Warfield, WA Department of Ecology, Product Stewardship Unit Supervisor

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Megan has held several positions within the Department of Ecology since joining the agency in 1997. She's had experience in both the Spills and Solid Waste programs, working on oil spill prevention, litter, household hazardous waste, and product stewardship. In January 2023, she moved to product stewardship full-time, and leads a unit responsible for implementing various product take-back programs including E-Cycle, LightRecycle and PaintCare. Megan graduated from Dickinson College and spent time on active duty in the U.S. Army as a logistics officer. She earned her Master's in Environmental Studies from Evergreen State College. She enjoys cooking, camping, and sailing with her family.

Dalan Zartman, Chief Operations Officer, Energy Security Agency

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Dalan Zartman has spent 25 years assigned to a urban heavy rescue as a firefighter - technical rescue specialist and paramedic. As the COO of the Energy Security Agency, he is responsible for fire and safety operations at the ESRG/ESA alternative energy research lab. He has provided safety oversight and fire-based management of large-scale battery tests for almost a decade and leads the ESA team in translating that real world knowledge into training programs and services to equip professionals around the world to interact with Electric Vehicles, li ion batteries, and Stationary storage systems in a safe and effective manner. Dalan leads the ESA emergency response sector to provide joint hazard mitigation with ESRG. This includes active response to major incidents and energy projects around the world. Dalan additionally provides safety training and consultation of EV manufacturers and has led the technical efforts to implement international training for recyclers and dismantlers through ISRI. Dalan is a columnist, podcast and conference presenter, and sits on the SAE First Responder Task Force.

Thursday, February 22nd

Keynote with Capt. Chris Greene (Ret.)

Lithium-Ion Batteries and the Challenges They Create for the Fire Service with Capt. Matt Lujan

Topics discussed will include Tactics, some relevant equipment, OEM's recommendations and how the rest of the world deals with these fires. Context will also be discussed in conjunction with the previously listed topics.

Cradle-to-Grave: Post Fire Lithium-Ion Battery Cleanup & Disposal with Sean Thompson and Mark Furnish

Lithium-Ion technology has become an integrated part of our lives. In the event of a fire or vehicle crash involving lithium-ion cells questions have come up around safe management and disposal. Ecology has worked with response partners to manage the cleanup of a Home Depot store post fire that took place in the lawn and garden battery area. Ecology has also supported local responders in the cleanup of an EV vehicle fire. The goal of this presentation is to discuss response, cleanup, and disposal actions to better prepare partners for similar events.

Deep Battery Diagnostics with Isidor Buchmann

Batteries need the same attention as traditional power sources. With electrification, battery diagnostics is lagging and there is fear of unexpected failure. Cadex is developing 'Deep Battery Diagnostics,' technology that identifies battery anomalies and notifies the user when charging or testing the battery with a device.

Strategies & Tactics: EV Fires with Captain Jeremy Morasch

Jeremy will be presenting the class that he taught to the 300+ members of the Spokane Fire Department on the risk and tactics related to electric vehicles and electric vehicle fires. This will be an example of how to disseminate the massive amount of information out there and teach it to your people. We also will have electric vehicles and a Pierce Transit electric bus to walk around and discuss real world tactics.

Friday, February 23rd

Leading the Charge: Battery Stewardship in Washington with Megan Warfield

Our reliance on portable batteries to power more and more everyday products comes with a cost. In addition to the social and environmental impacts associated manufacturing batteries, recycling or disposing of all these batteries comes at a cost. Lithium-ion batteries are causing fires, fatalities, facility damage and financial loss. This presentation explores the important role extended producer responsibility policies can play in ensuring not only the safe management of batteries at their end-of-life, but the recovery, reuse, and recycling of rare earth metals and other materials essential for a thriving battery economy. The presentation will briefly touch on extended producer responsibility policy and then focus on Washington's new battery stewardship law.

Arizona ESS and BESS Emergencies: Including Surprise APS Explosion with Hunter Clare

Class will give a background in some energy involved fires in the Phoenix Regional System leading up to April 19th, 2019, and the APS BESS explosion call that injured four Peoria Fire Medical Firefighter Hazmat Technicians and explore the Chandler SRP BESS system failure almost three years later to the day. We will discuss what we knew and what we know now, while exploring what has changed, what hasn't, and where we are going in the Valley and the rest of the fire service.

Grid Resilience with Eli King

Grid Resilience is the ability of the electric grid to withstand disasters and supply enough energy for growing community needs. Come learn about the Energy Resilience and Emergency Management Office's role and strategy around developing long term grid resilience. We'll talk about the work the state is doing to reach the 100% clean electricity goal by 2045 written in the Clean Energy Transformation Act and special considerations related to building EV chargers

Addressing Energy in Residential ESS with Capt. Chris Greene (Ret.)

Residential ESS has been available for decades. Historically, it came in the form of Solar panels and a bank of lead acid batteries. Today, that same system is much more common in the residential setting with one exception, the batteries used to support it are Lithium-Ion. This presents unique challenges for our national emergency responders. FSRI-UL has completed an in-depth look at this very issue and the information gathered is troubling. I will provide a brief review of this work and how this energy hazard is changing how we address residential emergencies.

Agency Capabilities

Round Robin style presentation to highlight how different state, local, and federal agencies can aid throughout the life cycle of EV and ESS response

Saturday, February 24th

Batteries in Recycling Transport Explosions, How, Why, Prevention, Mitigation with Bob Swaim

A renewed industry look is being conducted into potential causes surrounding lithium battery events which cause explosions rather than immediate fires. This presentation will center on a tractor trailer explosion which occurred in Birmingham Alabama in March 2023, incorporating reference material from a 1996 NTSB fuel tank explosion. It will also include other more recent events, such as a series of explosions and fires leading to the recall of Jeep Wrangler 4x hybrids.

Electric Vehicle and Lithium-Ion Battery Response for First & Second Responders with Dalan Zartman, Emily Wade and Lathan DeLeo

Are we working together as a team and understanding the challenges facing our tow and recovery professionals? As first responders, we are accountable to SAE J2990 to put our tow and rescue professionals in a position to succeed and work together towards reducing risk and safely managing electric vehicles and lithium-ion batteries

Tools of the Trade: The Good, The Bad, and The Ugly with Capt. Chris Pfaff

This brief presentation will discuss some of the tools that have been brought to the market or are emerging soon on the market available to first and second responders. We will discuss the benefits, downsides, and application of the wide array of tools available to assist responders in the mitigation of lithium-ion battery fires and final remediation/removal of these hazards.

Contamination & Toxicology of Li-ion Batteries: What We Know, Exposure Risks, PPE Contamination with Todd Smith

This course will cover a summary of the initial asphyxiant, and irritant gases produced during Li-ion fires along with the toxic metals we might be exposed to during and after the incident. Several studies will be reviewed regarding PPE contamination and what they show, talk about the study being conducted with TEEX and a national lab in Texas in the coming months, and the necessity of decontamination/testing and cleaning of PPE. The decontamination discussion will include how little is known about regular wash, extractors, and liquid CO2 extraction and their effectiveness. As time permits, the need for exposure reports for employees, testing when appropriate for heavy metals, and decontamination of apparatus and/or structures where these fires occur prior to occupancy.

Li-Ion Batteries in a Fire Disaster Response: Maui Case Study with Greg Jenkins

In the aftermath of the Maui wildfire disaster, the EPA's ESF-10 mission assignment to remove household and commercial hazardous waste, which included Lithium-ion batteries from properties and vehicles, faced challenges. Li-ion batteries are unpredictable. There were concerns over the safety of personnel and the public during hazardous waste removal operations. There was minimal guidance on how to handle Li-ion batteries once impacted by fire. Shipping via damaged, defective, or recalled (DDR) status is cost prohibitive and limited by shipping companies and carriers. Shipping companies and carriers do not like DDRs. There were little on-island resources for managing DDR/waste and few national experts. EPA operations conducted under ESF-10, unique response challenges presented by location, and the process of DDR batteries to "Not Batteries" will be reviewed specific to the Maui Wildfire Response.