Navigating a Transforming Utility Landscape
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Speaker: Emma Stewart

Title: Cybersecurity Threats and Policy Implications for Battery Energy Storage Systems

Abstract: The integration of battery energy storage systems (BESS) across critical infrastructure is a cross-sector resilience issue with direct implications for national security, industrial stability, and public safety. BESS now supports communications towers, hospitals, military installations, data centers, and electric vehicles, making its security a strategic imperative. As these systems become deeply embedded in critical operations, cyber vulnerabilities in BESS can create cascading disruptions across multiple sectors, threatening infrastructure reliability and operational continuity.

China currently dominates the global BESS supply chain, controlling a significant share of battery manufacturing, power electronics, and critical raw materials. This market concentration creates supply chain dependencies and cybersecurity risks, particularly for U.S. infrastructure reliant on foreign-manufactured components. Traditional “rip and replace” strategies have proven economically and technically destabilizing, underscoring the need for a more pragmatic risk management approach. This session will explore policy responses to supply chain dominance, including targeted risk mitigation strategies, diversification of suppliers, and the adoption of Cyber-Informed Engineering (CIE) principles. A key discussion point will be the need for independent “right to inspect” policies, ensuring asset owners and regulators can verify the security of foreign-manufactured components.

As BESS becomes a linchpin for industrial and national security, securing these systems requires proactive policies, regulatory enforcement, and industry-wide collaboration. This session provides a strategic roadmap for reducing foreign dependencies and strengthening BESS resilience across critical infrastructure sectors

Bio: Dr. Emma M. Stewart is a leading expert in power systems and critical infrastructure security, specializing in electric distribution, grid resilience, and industrial control system cybersecurity. She is the Chief Power Grid Scientist at Idaho National Laboratory (INL) and serves as the Director of the Center for Securing Digital Energy Technology. In these roles, Dr. Stewart leads cutting-edge initiatives to

strengthen the security and resilience of the power grid, addressing the critical challenges facing modern energy systems.

With over two decades of experience, Dr. Stewart has worked with international utilities, U.S. national laboratories, and organizations across the globe. Before joining INL, she served as Chief Scientist at the National Rural Electric Cooperative Association (NRECA), where she oversaw a multimillion-dollar R&D portfolio and led programs focused on workforce education, information sharing, and incident response for electric cooperatives. Emma has also served in roles leading interconnection analysis and planning for numerous utilities, and national labs over her 20 year career.