POWER
The United States Power Systems Development, Technology & Financing Summit
2025

SMART GRID ENGAGE

The US Power Summit | Wednesday 19th - Friday 21st November, 2025 | Austin- Texas

The U.S. power sector stands at a crossroads. With President Donald J. Trump's return to the White House in 2025, energy policy is shifting course. The administration has made clear its intent to prioritize fossil fuel production, streamline regulations, and roll back federal incentives for renewables. Executive orders targeting emissions rules, domestic energy expansion, and permitting processes are already reshaping the investment landscape for utilities, generators, and grid operators. Yet, while federal priorities pivot, the fundamental challenges facing the sector, aging infrastructure, cybersecurity threats, and the accelerating demand for electrification persist.

A Grid Under Pressure: America's grid is being tested as never before. The winter storms that left millions in Texas without power in 2021 were a stark reminder of the fragility of an outdated and underinvested system. Meanwhile, the rise of electric vehicles and the push for greater digitalization are increasing stress on transmission networks. Utilities must now weigh how to navigate shifting federal regulations while preparing for the long-term realities of an evolving energy landscape.

- **Regulatory Uncertainty and Market Disruptions**: The administration's rollback of climate regulations and renewed push for coal, oil, and natural gas could introduce volatility for utilities already committed to long-term decarbonization goals. Grid operators must also contend with new tariffs on imported energy infrastructure materials, raising costs for modernization efforts.
- **Energy Resilience and Infrastructure Investment:** The push for permitting reform may accelerate fossil fuel projects, but it remains to be seen whether investment in critical grid infrastructure—transmission lines, digital substations, and battery storage—will keep pace with demand.
- **Cybersecurity and Grid Reliability:** The 2021 ransomware attack on Colonial Pipeline demonstrated the vulnerability of critical energy infrastructure. As digital monitoring, AI-driven analytics, and real-time SCADA systems become the norm, the industry must harden its defenses against increasingly sophisticated threats.

Providing an essential forum for utility and energy executives, policymakers, and technology leaders the summit will assess and respond to the following emerging challenges.

- **The Policy Pivot**: Understanding how federal deregulation and market interventions will reshape energy investment and planning.
- **Balancing Fossil Fuels and Renewables**: Managing the divergence between state-led clean energy initiatives and federal priorities.
- **Cybersecurity and Grid Resilience**: Mitigating risks in an era of increasing digitalization and geopolitical instability.
- **The Economics of Electrification**: Navigating the financial and operational pressures of growing electricity demand in a fragmented regulatory environment.

Utilities, regulators, and investors must prepare for a period of both uncertainty and opportunity. While federal policy leans toward energy expansion, regional grid operators and state governments will continue to pursue their own clean energy transitions. The challenge is to strike a balance between policy shifts, economic realities, and long-term grid modernization.

The Power USA Summit is the place where these issues will be debated and where solutions will take shape. For those steering the future of American energy, it is not just an event, it is a necessity.

US Power Generation, (TSO) & (DSO) Power Financing and SMART GRID ENGAGE 2025 Agenda

Empowering the American Grid: The United States faces its own unique set of power system challenges over the next 5–10 years. From the winter blackouts that rocked Texas in 2021 to PG&E's preemptive shutoffs aimed at preventing wildfires in California, real-world events keep underscoring one truth: our aging grid is under intense pressure, and we must act fast.

EPG
Executive Peer Global Summits

The Growing Complexity of Energy Demand
With electric vehicles on track to make up half of new car sales by 2030—and states like California pushing for 100% carbon-free electricity by 2045—the U.S. power sector must scale up renewable capacity, battery storage, and load-management solutions at an unprecedented speed and scope.

Leveraging Innovative Technology and Infrastructure Gaps
U.S. faces its own set of distribution challenges, from upgrading rural substations to deploying cutting-edge SCADA and digital twin technologies for real-time oversight. Forward-thinking utilities like Florida Power & Light are already deploying battery mega-projects (e.g., Manatee Energy Storage Center), yet many states lag behind, leaving room for massive modernization.

Cybersecurity and Resilience: While the Ukrainian grid cyberattacks spurred Europe to fortify its grid defenses, the U.S. has also seen a sharp rise in attempted breaches on critical infrastructure. Bolstering resilience—whether against extreme weather or digital threats—is rapidly becoming the top priority for utilities nationwide.

Why Participants Attend: The **USA Power Summit** distills the latest breakthroughs and proven best practices from both American and international case studies, shaping a roadmap tailored to the U.S. landscape. Join energy leaders, innovators, and policymakers who are forging solutions to the country's most pressing energy challenges: integrating renewables, strengthening grid resilience, accelerating decarbonization, and leveraging advanced analytics to meet soaring demand, all while staying profitable and secure.

No other event offers such a focused forum on the operational realities, policy imperatives, and cutting-edge technologies that will drive the American power sector forward. Come ready to learn, collaborate, and lead the charge in securing a brighter, more resilient energy future for America.

US Power Generation, (TSO) & (DSO) Summit Stream

Advancements in Electric Power Generation (EPG) Technologies in the U.S:

Examining cutting-edge innovations in power generation technologies across various U.S. regions, including renewable energy, nuclear power, and energy-efficient technologies.

- Integration of advanced renewables (e.g., solar, wind) into the grid.
- Emergence of small modular reactors (SMRs) for decentralized nuclear energy.
- Efficiency improvements in thermal power plants.

Invited speakers include: David Schumann**,** Power Generation Director, **Florida Municipal Power Agency -** Chris Hansen, Vice President, Origination & Renewables, **Tennessee Valley Authority - Ben Cluff**, Director of Renewable Generation, **Arizona Public Service**

Modernizing Electric Power Transmission (EPT) Networks Across the U.S.

Focusing on the modernization efforts of aging transmission infrastructure in response to the growing demand for clean energy, particularly in regional grids.

- Expansion of high-voltage DC transmission for long-distance energy transfer.
- Smart grid technologies for dynamic grid balancing.

- Federal and state programs aimed at improving transmission reliability.

Invited speakers include: Angie Anderson, Transmission Generation Interconnections Director, **Sunflower Electric Power Corporation -** Anya Castillo, Director Transmission Fundamentals, **NextEra Energy Resources -** Harold Taylor**,** V.P. Transmission, Seminole Electric Cooperative, Inc.

The Future of Electric Power Distribution (EPD) in U.S. Cities

How U.S. cities are transforming their distribution networks to accommodate distributed energy resources (DERs), such as solar panels, electric vehicles (EVs), and energy storage systems.

- Integration of smart meters and IoT for real-time energy monitoring.
- The role of local microgrids in enhancing grid resilience and reducing transmission losses.
- Policies supporting urban energy efficiency and sustainability.

Invited speakers include: Arvind Patel**,** Director New Generation and Construction**, Arizona Public Service -** Michelle Kolp, Director AMI Operations & Strategy at WEC Energy Group, **WEC Energy Group -** Paul Gogan, Director - Electric Distribution Asset Management, **WEC Energy Group**

The Role of EPD in Enhancing Resiliency During Natural Disasters in the U.S.

Highlighting the importance of EPD systems in ensuring grid reliability during natural disasters, with a focus on how regional authorities are responding to extreme weather events.

- Hardening infrastructure to withstand extreme weather conditions.
- Microgrids and their role in ensuring energy access during disruptions.
- Federal disaster response strategies leveraging real-time data analytics.

Invited speakers include: Sean Reaney, Vice President, Construction, **Nautilus Solar Energy, LLC -** Jim Brencic**,** Director of Construction, **Clearway Energy Group -** David Tenan**,** Sr. Director Construction, **NextEra Energy Resources**

AI-Driven Optimization of EPG Systems in the U.S.

Exploring how artificial intelligence (AI) is revolutionizing electric power generation systems, particularly in decentralized regions with diverse energy needs.

- Predictive maintenance and fault detection in power plants.
- AI-driven demand forecasting for optimized energy generation.
- Integration of AI with renewable energy for better grid control.

Invited speakers include: Pete Persson**,** Director, AI Planning and Delivery, **Entergy -** Dr. Alexandra Von Meier, Director of Electric Grid Research, **Lawrence Berkeley National Laboratory (LBNL) -** Josh Parker, Director of Energy Strategy, **NVIDIA** - Calvin Butler, CEO, **Exelon Corporation -** Jennifer M. Granholm, Secretary, **U.S. Department of Energy -**

The Impact of Smart Grid Technologies on U.S. EPT and EPD

Examining the role of smart grid technologies in enhancing the efficiency and flexibility of U.S. transmission and distribution systems, particularly in fragmented regional grids.

- Real-time monitoring and optimization of grid performance.
- Remote sensing and control for faster grid recovery and reduced outages.
- Enhancing grid stability with distributed energy resources (DERs).

Invited speakers include: Jasdeep Singh, Director - Grid Modernization, **Arizona Public Service – APS -** Kerri Carnes, Director, Customer to Grid Solutions, **Arizona Public Service - APS**

Energy Storage and its Role in Balancing U.S. EPG, EPT, and EPD

Discussing the importance of energy storage systems in maintaining grid stability as renewable energy sources become more prevalent in the U.S.

- Large-scale energy storage technologies for balancing supply and demand.
- The role of storage in mitigating renewable energy intermittency.
- State-level incentives for energy storage deployment in regional grids.

Invited speakers include: Matt Rippe, Director - Energy Storage Integration, **NextEra Energy Resources -** Dr. Imre Gyuk, Director of Energy Storage Research, **U.S. Department of Energy -** Dr. Venkat Srinivasan, Director of the Argonne Collaborative Center for Energy Storage Science, **Argonne National Laboratory**

Cybersecurity Challenges in U.S. EPG, EPT, and EPD Networks

Considering the increasing cybersecurity threats to U.S. electric power networks, with an emphasis on regional vulnerabilities and security measures.

- Protecting transmission and distribution infrastructure from cyberattacks.
- Best practices for securing critical grid assets.
- Collaboration between utilities and federal agencies on cybersecurity solutions.

Invited speakers include: Ken Boyce, Vice President, **Engineering at UL** - David Boynton**,** Director – Cybersecurity**, Arizona Public Service – APS -** **Erik** Ruediger, Senior Manager, **Sunipro, LLC**

Decentralized Power Generation and its Influence on U.S. EPD Systems

Evaluating the growing trend of decentralized power generation (e.g., rooftop solar) and its effects on U.S. power distribution systems, particularly in urban and rural regions.

- Challenges of balancing decentralized generation with centralized grid systems.
- Impact on power quality and grid reliability.
- Regulatory and policy frameworks to support decentralized energy resources.

Invited speakers include: Benjamin Kroposki, Director of the Power Systems Engineering Center, **National Renewable Energy Laboratory (NREL) -** Emily Felt, Engagement Lead, **U.S. Department of Energy -** Arjune Maraj, Project Manager, **Technip Energies**

US Power Financing

Innovative Financing Mechanisms for the Energy Transition

- **Tokenization of Energy Assets:** Exploring blockchain technology to fractionalize and trade renewable energy investments, enhancing liquidity and accessibility.
- **Climate-Aligned Financial Instruments:** Structuring financial products with performance-based outcomes tied to carbon reduction targets, aligning investor returns with environmental impact.
- **Transition Bonds:** Financing projects that facilitate the shift from fossil-fuel-dependent infrastructure to sustainable solutions.

Invited speakers include: Karen Fang, Managing Director and Global Head of Sustainable Finance, **Bank of America -** Michael Liebreich, Founder, Bloomberg New Energy Finance; Chairman and CEO, **Liebreich Associates -** Richard Kauffman, Chairman of Energy and Finance for New York; Chairman, **New York State Energy Research and Development Authority (NYSERDA) -** Dan W. Reicher, Former Assistant Secretary of Energy; Founding Executive Director, **Stanford's Steyer-Taylor Center for Energy Policy and Finance -** John Kerry, Co-Executive Chair, **Galvanize Climate Solutions; Former U.S. Special Presidential Envoy for Climate.**

Future of ISO/RTO Financing in a Decentralized Energy Market

Dynamic Pricing Models to Fund Grid Resilience: Implementing real-time, market-driven pricing structures to incentivize investments in grid stability.

- **Regional Market Harmonization:** Addressing the financial challenges and opportunities in consolidating market regions to enhance efficiency and reliability.
- **Advanced Hedging Strategies for Transmission Investments:** Developing sophisticated financial instruments to manage risks associated with renewable energy integration.

Invited speakers include: Neil Chatterjee, Former Chairman, **Federal Energy Regulatory Commission -** Cheryl LaFleur, Former Commissioner**, Federal Energy Regulatory Commission -** Gordon van Welie, President and CEO, **ISO New England -** Stephen G. Whitley, Former President and CEO, **New York ISO -** Craig Glazer, Vice President, Federal Government Policy, **PJM Interconnection**

Investment Trends in Grid-Edge Technologies

- **Financing Virtual Power Plants (VPPs):** Monetizing distributed energy resources through aggregation platforms to provide grid services.
- **AI-Driven Optimization Tools:** Securing funding for machine learning and AI systems that predict grid behavior and enhance operational efficiency.
- **Revenue Sharing Models for EV Infrastructure and Grid Interconnection:** Developing collaborative financial frameworks to support the integration of electric vehicle infrastructure with the grid.

Invited speakers include: Dr. Imre Gyuk, Chief Scientist for Energy Storage Research, **U.S. Department of Energy Xiaoping Wang,** Lead Energy Specialist, **World Bank Group -** Eric Hsieh, Deputy Assistant Secretary for Energy Storage**, U.S. Department of Energy Simon Phelan**, Founder and CEO, **Hometree -** Angela Karl, Head of Energy Transition Fund, **HMC Capital Grant -** Chang-Chien, Senior Director, Project Finance - Financial

Structuring & Analysis, **Clearway Energy Group -** Lisa Lane, Director Finance, **Arizona Public Service – APS -** Ashley Kender, Director of Financial Planning and Analysis, **Nautilus Solar Energy, LLC -** Tim Foley, Director, Financial Operations, **Terra-Gen, LLC -** Josh Mason, Director of Financial Planning and Analysis, **Georgia Power Company**

Financing Integrated Renewable Energy and Grid Projects

- **Blended Capital for Hybrid Energy Systems**: Secure a combination of public and private capital for hybrid renewable energy projects that integrate generation, transmission, and storage with smart grid technology.
- **Innovative Financing for Microgrids**: Attract investment for microgrid development through public-private partnerships and decentralized finance models like crowdfunding or community ownership.
- **Energy Storage as a Revenue Model**: Incorporate energy storage systems into renewable energy projects to provide ancillary services (e.g., frequency regulation) and improve project bankability.
- **Grants and Incentives for Grid-Integrated Projects**: Utilize government grants and tax incentives to support integrated projects that improve grid stability, energy storage, and renewable integration.

Invited speakers include: Karen Fang Managing Director and Global Head of Sustainable Finance, **Bank of America -** Jon Creyts, CEO, **Rocky Mountain Institute (RMI) -** David Arfin, CEO, **NineDot Energy -** Peter Lilienthal, Founder, **HOMER Energy (a UL company) -** Kelly Speakes-Backman Former CEO, **Energy Storage Association; Former U.S. Department of Energy Official -** Paul Browning President & CEO, **Mitsubishi Power Americas -** Michael Picker Former President, **California Public Utilities Commission (CPUC)**

Powering the Future: Smart Grid Engage 2025

Recent events across the country have spotlighted the critical need to modernize America's power infrastructure. In February 2021, Texas's catastrophic winter storm caused widespread outages, underlining the importance of Resilience and Reliability—and showcasing the peril of outdated SCADA systems that struggle with real-time decisions. Meanwhile in California, PG&E's preemptive blackouts to prevent wildfires exposed how limited big data management can hamper utilities' ability to swiftly pinpoint risks and optimize load balancing. Even as more distributed energy resources come online, companies like Duke Energy are investing in digital substations to enhance situational awareness, cut maintenance costs, and handle the explosion of grid data from millions of smart meters and IoT devices.

Against this backdrop, utilities across the U.S. are turning to AI-driven Decision Support Systems, next-generation SCADA platforms, and robust big data analytics to improve everything from daily load forecasting to emergency response. Florida Power & Light's Manatee Energy Storage Center, for

example, demonstrates how large-scale Battery Storage Solutions—combined with advanced SCADA and big data insights—can deliver more reliable power during peak demand or natural disasters. From integrating massive EV fleets to decarbonizing generation portfolios, these next-level technologies are shaping the future of grid operations. Join the Smart Grid Engage 2025 to hear first-hand success stories, discover practical tools for Cybersecurity and Grid Decarbonization, and learn how digital innovation is revolutionizing the way Americans produce, distribute, and consume energy.

Smart Grid Engage Summit Themes

Decision Support Systems for Smart Grid

Decision Support Systems (DSS) integrate advanced analytics, AI, and machine learning to assist in real-time decision-making for grid operations. These systems optimize power distribution, fault detection, and energy storage management.

- AI-driven tools for load forecasting and grid optimization.
- Risk analysis in energy trading and operations.
- Integration of renewable energy sources into the grid.

Invited speakers include: Patrick Hughes, Senior Vice President, **National Electrical Manufacturers Association (NEMA) -** Freddie Wright, Grid Investment Program Director, **Georgia Power Company**

Grid Resilience and Reliability Enhancements

Resilience focuses on the grid's ability to recover from disruptions like natural disasters or cyberattacks, while reliability ensures consistent energy supply.

- Strategies for minimizing outage durations.
- Use of microgrids and backup systems.
- Advanced fault detection and repair systems.

Invited speakers include: Rainey Center, Vice President, Grid and Technical Solutions, **Dominion Energy -** Brian D'Agostino, Director of Grid Resilience**, U.S. Department of Energy -** Branden Sudduth, Vice President, Reliability Planning and Performance Analysis, **Western Electricity Coordinating Council -** Dr. Julia Matevosyan, Senior Engineer, **Energy Systems Integration Group (ESIG)** - Robert Reedy, Technology Manager, BGS and Contractor to **DOE – SETO -** Masood Parvania, Associate Professor of Electrical and Computer Engineering, **University of Utah.**

Distribution Automation and Control

Automation in power distribution enhances efficiency, reduces human errors, and enables remote monitoring and control.

- Self-healing grids for automatic fault isolation.
- Smart switches and automated reclosers.
- Real-time load balancing across networks.

Invited speakers include: Gabriel Valdez, Asset Monitoring and Communication (AMC) Product Management Leader, **GE Vernova -** Nic DiFonzo, Lead Power Grid Automation Engineer, **G&W Electric -** Alex Baldwin, Business Development Manager - Power Grid Automation, **G&W Electric -** Kevin Dumas, Vice President of Product Management & Applications, **Mobile Industrial Robots (MiR).**

HVDC for Smart Grid

High Voltage Direct Current (HVDC) technology offers efficient long-distance electricity transmission and supports renewable energy integration.

- Benefits of HVDC for interconnecting distant grids.
- Reducing energy losses in transmission.
- Role of HVDC in stabilizing grid frequency.

Invited speakers include: Orestes Macchione, Head of Sales, **HVDC & Grid Access -** Dr. Babak Enayati, Director, HVDC and FACTS Applications, **National Grid -** Dr. Chaouki G. Abdallah, Executive Vice President for Research, **Georgia Institute of Technology -** Dr. Anjan Bose, Regents Professor of Electrical Engineering, **Washington State University -** Dr. John Paserba, Vice President, Power Systems**, Mitsubishi Electric Power Products, Inc. -** Dr. Saifur Rahman, Professor of Electrical and Computer Engineering, **Virginia Tech.**

Battery Storage Solutions

Energy storage systems, especially batteries, play a critical role in stabilizing grids by storing excess renewable energy and releasing it when demand peaks.

- Benefits of lithium-ion, solid-state, and flow batteries.
- Enhancing grid reliability with large-scale battery storage.
- Role in renewable energy integration and peak shaving.

Invited speakers include: John Warner, Chief Customer Officer, **American Battery Solutions -** Dr. Imre Gyuk, Director of Energy Storage Research, **U.S. Department of Energy (DOE) -** Megan McFarland, Senior Vice President of Energy Storage, **AES Clean Energy -** Patrick Lee, Senior Director of Energy Storage, Con Edison - Lie Shi, CEO, **AM Batteries.**

Real-Time Monitoring

Real-time monitoring ensures dynamic oversight of the grid, enabling quick responses to faults or irregularities.

- Smart sensors and IoT devices for monitoring.
- Predictive maintenance using real-time data.
- Applications of SCADA (Supervisory Control and Data Acquisition) systems.

Invited speakers include: Dr. Kang B. Lee, Leader, Smart Grid Group, **National Institute of Standards and Technology (NIST) -** Bahman Hoveida, President & CEO, **Open Systems International (OSI) -** Dr. Anurag Srivastava, Professor and Chair, Electrical Engineering and Computer Science, **West Virginia University -** Dr. Saifur Rahman, Professor of Electrical and Computer Engineering, **Virginia Tech.**

Policies and Strategies for Smart Grid

Effective policies and strategies are vital for implementing and regulating smart grid initiatives.

- Government incentives for smart grid technologies.
- Standards for interoperability and data sharing.
- Long-term strategies for decarbonization and modernization.

Invited speakers include: Jon Wellinghoff, Chief Executive Officer, **Grid Policy, Inc. -** Patricia Hoffman, Principal Deputy Director, Grid Deployment Office, **U.S. Department of Energy (DOE)**

Electric Vehicles (EVs) and Smart Grid Integration

The rise of EVs demands a robust smart grid infrastructure for efficient charging, load balancing, and grid resilience.

- Role of Vehicle-to-Grid (V2G) technology in energy storage.
- Optimizing grid operations with smart EV charging stations.
- Policies and incentives for EV adoption and grid integration.

Invited speakers include: Kerri Stewart, Chief Strategy Officer & President, **Miller Electric Company** - Matt Mesick, Director, EV Strategies, **Isuzu Commercial Truck of America, Inc.**

Smart Grid Cybersecurity

Securing the grid against cyber threats is crucial for maintaining trust and reliability.

- Identifying vulnerabilities in smart grid systems.
- Implementing encryption and multi-layered defenses.
- Importance of cybersecurity training and standards.

Invited speakers include: Oliver Kosut, Associate Professor, **Arizona State University -** Raheem Beyah, Dean of the College of Engineering and Southern Company Chair, **Georgia Institute of Technology -** Yanxiao Zhao, Ph.D., Associate Professor, Department of Electrical and Computer Engineering, **Virginia Commonwealth University -** Zhifang Wang, Ph.D., Associate Professor, Department of Electrical and Computer Engineering, **Virginia Commonwealth University -** Massoud Amin, Ph.D., Chairman, President, and Chief Executive Officer, **Energy Policy and Security Associates -** Deepa Kundur, Ph.D., Professor and Chair, Department of Electrical and Computer Engineering, **University of Toronto.**

Successful Applications of Smart Grid

Case studies and real-world implementations demonstrate the effectiveness of smart grid technologies.

- Examples of microgrids in disaster recovery scenarios.
- Projects integrating AI for grid optimization.
- Renewable energy hubs connected via smart grid solutions.

Invited speakers include: Joshua Wong, CEO, **Opus One Solutions -** Patricia Hoffman - Senior Advisor, Grid Modernization, **U.S. Department of Energy (DOE) -** Scott Harden, Chief Technology Officer, Smart Grid Solutions, **GE Digital -** Cheryl LaFleur, Former Chair, **Federal Energy Regulatory Commission (FERC) -** Julian Leslie, Head of National Control, **National Grid Electricity System Operator (ESO).**

Grid Decarbonization Strategies

Strategies and technologies that aim to reduce carbon emissions in power generation, distribution, and consumption, contributing to a sustainable energy future.

- **Renewable Energy Integration**: Incorporating solar, wind, and other renewables into the grid to replace fossil fuels.
- **Battery Storage Systems**: Utilizing advanced storage solutions to manage renewable energy intermittency and ensure reliable supply.
- **Demand-Side Management**: Implementing energy efficiency programs to optimize consumption and reduce waste.
- **Carbon Pricing Mechanisms**: Introducing policies like carbon taxes to incentivize cleaner energy production and consumption.
- **Electric Vehicle (EV) Infrastructure**: Expanding EV charging networks to support decarbonized transportation.
- **Collaborations with Heavy Industries**: Partnering with sectors to transition operations to low-carbon alternatives.

Invited speakers include: Ralph Izzo, Chairman, President, & **CEO Public Service Enterprise Group (PSEG) -** Tom Weaver, Senior Vice President of Electrification, **National Grid -** Dawn Lippert, CEO, **Elemental Excelerator -** Patricia Poppe, CEO, **PG&E Corporation -** Abigail Ross Hopper, President and CEO, **Solar Energy Industries Association (SEIA).**

Advanced Metering Infrastructure (AMI)

AMI systems provide real-time monitoring of electricity usage, enabling efficient energy management and dynamic pricing models.

- **Energy Usage Monitoring**: Smart meters track and report real-time energy consumption for better resource allocation.
- **Demand Response Enablement**: Facilitates dynamic load management by adjusting consumption during peak times.
- **Consumer Empowerment**: Provides customers with detailed insights into their energy use, promoting efficiency.
- **Grid Modernization**: Supports automated fault detection and quicker restoration of services.
- **Data Analytics**: Leverages meter data to optimize grid performance and forecast demand accurately.

Invited speakers include: John Toubassi, Managing Director Advanced Metering, Grid Edge Solutions & Operations, **TRC Companies Inc. -** John Russell, Vice President of AMI Deployment, **ConEdison -** Paul Lau, CEO, **Sacramento Municipal Utility District (SMUD) -** Dr. Massoud Amin, Smart Grid and AMI Consultant, **University of Minnesota -** Katherine Hamilton, Chair, **38 North Solutions.**

Digital Twins in Smart Grid Planning

Digital twins are virtual replicas of physical grid components that enable utilities to simulate, analyze, and optimize operations before implementation.

- **Predictive Analysis**: Simulates grid behavior under various scenarios, enabling proactive solutions to potential issues.
- **Asset Management**: Tracks and predicts the performance and lifespan of grid components to enhance reliability.
- **Testing and Upgrades**: Allows virtual testing of new configurations and upgrades, reducing downtime and risks.
- **Integration of Renewables**: Models the impact of renewable energy sources on grid stability and performance.
- **Cost Optimization**: Helps reduce operational costs through precise planning and resource allocation.

Invited speakers include: Noel Schulz, Chief Engineer, **National Renewable Energy Laboratory (NREL) -** Scott Harden, Chief Technology Officer, Smart Grid Solutions, **GE Digital -** Biren Prasad, Vice President of Digital Transformation, **Siemens Energy -** Patricia Hoffman, Senior Advisor, Grid Modernization, **U.S. Department of Energy (DOE)**

Blockchain-Enabled Peer-to-Peer Energy Trading in Local Communities

Blockchain technology facilitates secure and decentralized energy trading between consumers, empowering local communities to manage energy resources efficiently.

- **Decentralized Trading**: Enables individuals to buy and sell surplus energy directly without intermediaries.
- **Transparency and Security**: Blockchain ensures tamper-proof and transparent transaction records.
- **Renewable Energy Utilization**: Encourages the adoption of solar and wind energy by making local trading profitable.
- **Community Empowerment**: Enhances energy independence and cost savings for local communities.
- **Reduced Grid Load**: Alleviates strain on centralized grid systems by promoting local energy exchanges.

Invited speakers include: John Pettigre, CEO**, National Grid -** Jean-Pascal Tricoire, Chairman and CEO, **Schneider Electric -** Drew Baglino, Senior Vice President, Powertrain and Energy Engineering, **Tesla Energy -** Calvin Butler Jr., CEO, **Exelon Corporation -** Timothy Cawley, President and CEO, **ConEdison (Consolidated Edison, Inc.) -** Lynn Good, Chair, President, and CEO, **Duke Energy**

Substations

Large-Scale Deployment: Roadmap for Digital Substations

Strategy for the large-scale deployment of digital substations within transmission and distribution grids. The discussion will focus on creating a detailed roadmap, securing long-term investments, and mobilizing the workforce using AR/VR training to ensure seamless grid modernization.

- Develop a phased deployment roadmap with clear milestones and KPIs.
- Secure long-term investment through robust business cases and public-private partnerships.
- Mobilize and upskill the workforce via AR/VR training and immersive learning solutions.
- Enhance grid reliability with real-time monitoring, predictive analytics, and AI-driven maintenance.
- Foster industry collaboration and standardization for seamless system integration.

Invited speakers include: Mladen Kezunovic, Professor, Electrical & Computer Engineering, **Texas A&M University -**

Process Bus Architecture in Transmission Grids

Focus on deploying reliable, scalable, and flexible process bus architectures to improve data exchange, automation, and operational efficiency in U.S. transmission grids.

- Develop standardized process bus protocols for seamless data exchange.
- Ensure scalability and flexibility to accommodate future grid innovations.
- Enhance automation and control through robust communication systems.

Invited speakers include: Andrew Goodman, Executive General Manager – Commercial, Sales & Tendering - **GE Grid Solutions**, General Electric - David E. Culler, Professor, **University of California at Berkeley, CA,**

Workforce Development for Digital Substations

Build frameworks for training and knowledge transfer to ensure a skilled workforce capable of managing the complexities of digital substations and grid modernization.

- Design comprehensive training programs focused on digital substation technologies.
- Implement certification and continuing education programs for grid operators.
- Foster collaboration between industry, academia, and technology providers.

Invited speakers include: [Insert Speaker Name and Title]

Virtual Reality for Workforce Training in Digital Substations

Utilize Virtual Reality (VR) to expedite workforce training, ensuring rapid adoption and operational proficiency in digital substations across the U.S. grid.

- Develop immersive VR training modules tailored to substation operations.
- Accelerate skills acquisition through realistic simulation of grid environments.
- Integrate VR training with ongoing learning and development initiatives.

Invited speakers include: [Insert Speaker Name and Title]

Substation Virtualization and Sustainability

Leverage AI and SF_6-free technologies to implement virtualized substations, thereby enhancing sustainability, grid performance, and cost-effectiveness in the USA.

- Integrate AI for dynamic operational management of virtual substations.
- Adopt SF_6-free technologies to minimize environmental impact.
- Improve cost-effectiveness and performance through virtualization of substation components.

Invited speakers include: Brandon Prego, Sr Manager Substation Engineering, **PPL Electric Utilities -** Brent Coakley, Director of Operations- Ohio Substation Services, **FirstEnergy**

Next-Generation SCADA and EMS Solutions

Develop advanced SCADA (Supervisory Control and Data Acquisition) and EMS (Energy Management System) features to enable better situational awareness and management of complex grid operations in the USA.

- Enhance real-time monitoring and control with advanced SCADA systems.
- Integrate predictive analytics for improved EMS functionality.
- Streamline grid management through automation and digitalization.

Invited speakers include: Ian Hiskens, Professor, **University of Michigan -** Raja Ayyanar, Professor, **Arizona State University -** Carter Baker, Communication/SCADA Superintendent, **Brazos Electric Power Cooperative**

IED Virtualization for Digital Substations

Focus on standardizing hardware and configuration management to facilitate the deployment of virtual Intelligent Electronic Devices (IEDs) in next-generation digital substations.

- Develop common standards for virtual IED configuration and management.
- Improve interoperability and scalability of digital substation systems.
- Enhance system resilience through advanced virtualization techniques.

Invited speakers include: Mladen Kezunovic, Professor, Electrical & Computer Engineering, **Texas A&M University -** Dr. Noel Schulz, Professor, **Washington State University -** Kevin Tomsovic, Chancellor's Professor, **The University of Tennessee,** Knoxville- Craig Stiegemeier, Consultant, **Hitachi Energy -** Paul Myrda, Sr. Program Manager - Transmission Operations, **Electric Power Research Institute (EPRI) -** Stephen J Callahan, Government & Grid Mod, **Qualus**

Inter-Substation Communication and Grid Synchronization

Utilize fiber optic networks and advanced communication technologies to achieve real-time, high-precision synchronization across substations and Distributed Energy Resources (DER), ensuring grid stability in the U.S.

- Implement fiber optic communication systems for rapid data exchange.
- Enhance grid stability through precise inter-substation synchronization.
- Enable seamless integration of DERs with centralized grid operations.

Invited speakers include: Ken Nichols, Large Scale Renewables and Capacity DERs, **Avangrid**

Grid Optimization & Control

Grid optimization and control focus on enhancing the efficiency, reliability, and flexibility of electricity distribution systems, particularly as more renewable energy sources are integrated into the grid. These innovations will improve how energy is transmitted, distributed, and managed in real time, ensuring a more resilient and cost-effective grid.

Dynamic Line Rating (DLR)

Dynamic Line Rating (DLR) leverages real-time weather data, drone scanning, and predictive forecasting to optimize the operation of the transmission grid. It provides a more accurate assessment of the current carrying capacity of transmission lines, enhancing grid performance, alleviating congestion, and improving system control.

- **Real-Time Weather Data:** Uses live meteorological data to assess line capacity under changing weather conditions.
- **Drone Scanning:** Employs drones for high-resolution inspections, increasing the speed and accuracy of data collection.
- **Predictive Forecasting:** Implements machine learning algorithms to predict future weather and its impact on transmission lines.
- **Increased Efficiency:** Helps better manage grid load and reduce congestion, leading to fewer outages and more reliable energy delivery.
- **Renewable Energy Integration:** Supports integrating renewable energy sources by providing real-time grid capacity information.

Invited speakers include: [Insert Speaker Name and Title]

Engineering Process

Modern engineering tools and methodologies are revolutionizing the design, installation, and scaling of digital substations. These advancements allow for faster, more efficient, and scalable grid infrastructure deployment across the United States, particularly with the rise in renewable energy sources.

- **Advanced Simulation Tools:** Uses sophisticated engineering software to simulate grid operations and predict potential issues.
- **Digital Substation Technology:** Focuses on the integration of digital sensors, automation, and remote monitoring for better management.
- **Faster Installation:** Optimizes installation processes to reduce the time and cost required to build and scale substations.
- **Remote Monitoring:** Utilizes IoT technology for real-time monitoring and management of substation systems.
- **Energy Efficiency:** Aims to improve overall grid efficiency by minimizing energy losses and maximizing the capacity of substations.

Invited speakers include: John Arp, Vice President, Engineering & Technical Services, **A&N Electric Cooperative**

Commissioning

Automated testing systems for substation commissioning are helping to improve the speed and accuracy of deploying multi-vendor substations. These systems ensure that all equipment functions correctly and meets regulatory and operational standards, ensuring reliability.

- **Automated Testing Systems:** Deploys testing tools to verify the functionality of substation components before they are connected to the grid.
- **Multi-Vendor Systems Integration:** Ensures seamless integration of equipment from various manufacturers, reducing compatibility issues.
- **Faster Deployment:** Speeds up the process of getting substations operational without compromising on safety or reliability.
- **Cost Efficiency:** Reduces human labor and time associated with traditional testing and commissioning methods.
- **Regulatory Compliance:** Ensures substations meet all legal and regulatory requirements from the outset.

Invited speakers include: Kenneth Peterson Director of Substations, **Large Projects at LUMA Energy**

Virtualization

Virtualization of substation systems involves creating digital models of substations to improve flexibility, cost-efficiency, and workforce adoption. Virtualized systems help streamline operations, reduce operational costs, and provide better insights into grid performance and optimization.

- **Cost-Effectiveness:** Virtualized systems help cut down on physical infrastructure costs by simulating systems digitally.
- **Operational Flexibility:** Allows utilities to scale their infrastructure quickly and adapt to changes in grid demand.
- **Enhanced Workforce Adoption:** Reduces the need for on-site personnel by providing remote management and monitoring capabilities.
- **Faster Decision-Making:** Provides real-time data that helps utilities make more informed decisions about grid management.
- **Improved System Efficiency:** Allows for better optimization of grid assets, enhancing overall system performance.

Invited speakers include: [Insert Speaker Name and Title]

GOOSE & SV

GOOSE (Generic Object-Oriented Substation Event) and SV (Sampled Values) protocols enable high-speed exchanges of status information and analog measurements between Intelligent Electronic Devices (IEDs) within grid systems. This facilitates better real-time decision-making, improving grid reliability and safety.

- **Real-Time Data Exchange:** Enables high-speed, reliable communication between IEDs for faster response times.
- **Improved Grid Reliability:** Increases grid resilience by providing instantaneous status updates and fault detection.

- **Safety Enhancements:** Helps mitigate risks by enabling immediate protective measures when system faults are detected.
- **Standardization:** Facilitates interoperability between equipment from different vendors by using standardized communication protocols.
- **Scalability:** Allows the system to grow by adding more IEDs without compromising on communication speed or data integrity.

Invited speakers include: [Insert Speaker Name and Title]

Fault Isolation & Service Restoration

This technology uses advanced protection methods, such as traveling wave technology, to locate faults quickly and restore service faster, especially in grids with heavy renewable energy integration. By minimizing downtime, it enhances grid reliability and reduces the impact of outages.

- **High-Speed Fault Location:** Uses traveling wave technology to detect faults in real-time, speeding up fault location and isolation.
- **Faster Service Restoration:** Allows utilities to quickly reroute power and restore service to affected areas, minimizing downtime.
- **Renewable Energy Integration:** Provides faster fault isolation in grids with a high percentage of renewable energy sources, which can be more variable and prone to instability.
- **Minimized Outages:** Reduces the duration and frequency of outages, improving overall service quality.
- **Advanced Protection Methods:** Uses real-time data to activate protection mechanisms and prevent damage to equipment.

Invited speakers include: Dr. Shimao Li, Assistant Professor, **University of Buffalo**

SCADA/EMS Systems

SCADA (Supervisory Control and Data Acquisition) and EMS (Energy Management Systems) are critical for modern grid management, particularly as the energy landscape in the USA becomes more decentralized with increasing integration of Distributed Energy Resources (DERs). This session explores how these systems are evolving to manage complexity and improve grid operations.

DER Landscape

The integration of Distributed Energy Resources (DERs) such as solar, wind, and battery storage into the grid presents challenges in forecasting, balancing supply and demand, and maintaining grid stability. This topic will focus on strategies for managing the impact of DERs and improving grid reliability.

- **Forecasting Improvements:** Enhance the ability to predict DER generation and consumption patterns to better balance supply and demand.
- **Grid Stability:** Address challenges like voltage fluctuations and system congestion caused by the variability of DERs.
- **Demand-Supply Balancing:** Employ advanced forecasting tools to ensure grid stability while maintaining an efficient energy supply.
- **Increased DER Penetration:** Examine the growing role of DERs in meeting energy demands and their impact on grid operations.
- **Smart Grid Technologies:** Use of intelligent grid systems to accommodate and optimize DER integration while maintaining grid reliability.

Invited speakers include: Temitope Bankefa, Energy Engineer | Research Scientist | Energy Markets Analyst, **Basin Electric Power Cooperative -** Carter Baker, Communication/SCADA Superintendent, **Brazos Electric Power Cooperative -** Ken Nichols, Large Scale Renewables and Capacity DERs, **Avangrid**

Real-Time Monitoring & Control

Managing the vast amounts of data generated by AMI, IoT devices, and sensors throughout the grid is critical for improving situational awareness and operational decision-making. Real-time monitoring ensures grid operators can react quickly to dynamic conditions and optimize grid performance.

- **Data from AMI & IoT:** Leverage data from Advanced Metering Infrastructure (AMI) and Internet of Things (IoT) devices to monitor grid health and performance.
- **Enhanced Situational Awareness:** Use real-time data to gain a comprehensive view of grid status across various locations.
- **Operational Decision-Making:** Improve decision-making with live data to optimize grid performance and respond rapidly to faults or disruptions.
- **Data Analytics:** Implement data analytics platforms to process and derive actionable insights from vast amounts of data.
- **Improved Reliability:** Use real-time data to predict potential failures and proactively manage grid reliability.

Invited speakers include: Sara Zember, AMI Data Leader, **A&N Electric Cooperative -** Benjamin Henry, Director, AMI Strategy, **PECO**

Offshore Wind

Integrating offshore wind power into the grid can create challenges like voltage fluctuations and frequency instability. This topic will explore solutions to mitigate these issues and enhance the real-time control and monitoring systems for offshore wind integration.

- **Voltage Fluctuations:** Address voltage instability issues caused by the intermittent nature of offshore wind generation.
- **Frequency Stability:** Ensure that the grid maintains consistent frequency when integrating variable renewable energy sources like offshore wind.
- **Real-Time Integration:** Develop real-time control systems to manage the variability of offshore wind and smooth its integration into the grid.
- **Advanced Forecasting Models:** Use forecasting models to better predict wind generation and adjust grid operations accordingly.
- **Offshore Wind Infrastructure:** Develop and implement infrastructure that can handle the unique challenges of offshore wind power transmission and integration.

Invited speakers include: Vineet Agrawal, Vice President - EPIC Projects, **HAL OFFSHORE LTD -** David Hardy, CEO, **Ørsted Offshore North America -** Temitope Bankefa, Energy Engineer | Research Scientist | Energy Markets Analyst, **Basin Electric Power Cooperative -** Kiran Singh, Energy Market Analyst**, Redeux Energy**

DERMS (Distributed Energy Resource Management Systems)

DERMS are becoming essential to manage the increasing number of DERs connecting to the grid. This system enables grid operators to efficiently manage decentralized energy resources, ensuring they are fully integrated into the energy market and grid system.

- **Integration of DERs:** Manage the growing number of DERs on the grid to optimize generation and ensure grid stability.
- **Decentralized Energy Systems:** Enable the transition to decentralized energy systems by providing tools to manage local generation and storage.
- **Grid Flexibility:** Enhance grid flexibility by dynamically adjusting energy flows and responding to local demand using DERs.
- **Optimizing DER Participation:** Develop strategies to incorporate DERs into grid operations, enabling their active participation in energy markets.
- **Demand Response:** Use DERMS to improve demand-side management and integrate demand response mechanisms effectively.

Invited speakers include: Dr. Jon Wellinghoff, Former Chairman, **Federal Energy Regulatory Commission (FERC)-** Steve Hauser, CEO, **Association of Edison Illuminating Companies**

WAMS (Wide Area Monitoring Systems)

Wide Area Monitoring Systems (WAMS) utilize synchronized data from multiple locations to monitor voltage, current, and frequency across large geographic regions. This enhances the ability to detect issues early and improve grid management over large areas.

- **Synchronized Data:** Collect synchronized data on voltage, current, and frequency from multiple locations across large areas of the grid.
- **Enhanced Situational Awareness:** Provide grid operators with real-time insights across a broad geographic area to enhance decision-making.
- **Early Fault Detection:** Use WAMS to detect faults and disturbances quickly, improving response times and preventing system failures.
- **Operational Efficiency:** Enhance the efficiency of grid management by providing a holistic view of grid performance over large regions.
- **Scalable Systems:** Design WAMS to scale effectively across different grid sizes, accommodating the increasing complexity of modern grids.

Invited speakers include: Dr. Shimao Li, Assistant Professor, University of Buffalo

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Smart Metering & Data Management

Smart metering and data management play a pivotal role in enhancing the performance, reliability, and efficiency of power grids. This session covers innovations in third-generation meters, grid edge intelligence, AI/ML applications for meter data, and advanced techniques for load forecasting and power quality monitoring.

3rd Generation Meters

Third-generation smart meters are modular, flexible, and cost-efficient, designed to enhance grid infrastructure and support the collection of real-time data. These meters are integral to modernizing grid management in the USA, allowing for more accurate readings and improved operational capabilities.

- **Modular & Flexible Design:** Tailored for easy integration and scalability across diverse grid systems in the USA.
- **Real-Time Data Collection:** Enable continuous, accurate data collection to support dynamic grid management and improve operational insights.
- **Cost-Efficiency:** Provide affordable solutions that minimize operational costs while improving data accuracy.
- **Enhanced Grid Management:** Improve monitoring and management capabilities by integrating with grid management systems and other smart devices.
- **Data Security:** Implement advanced security features to safeguard collected data from potential cyber threats.

Invited speakers include: Sara Zember, AMI Data Leader**, A&N Electric Cooperative -** Carrie Guajardo, AMI Analytics & Support Supervisor, **AEP Texas**

Grid Edge Intelligence

Edge analytics refers to processing data closer to where it is generated (at the grid edge) rather than transmitting it to central servers. This reduces latency, enhances fault detection, and improves operational efficiency by empowering local grid operators to make faster, data-driven decisions.

- **Reduced Latency:** Enable real-time decision-making by processing data locally, reducing the need for data transfer to centralized systems.
- **Fault Detection:** Enhance fault detection and resolution by analyzing data at the grid edge, leading to faster response times.
- **Operational Efficiency:** Optimize grid operations by providing local operators with actionable insights without the delays of remote data processing.

- **Scalable Solutions:** Build scalable edge analytics systems that can be expanded as the grid evolves with new technologies and requirements.
- **Cost Savings:** Minimize data transfer and processing costs by relying on edge intelligence for local decision-making.

Invited speakers include:

Meter Data Management

AI/ML-based tools are essential for managing and analyzing the large volumes of data generated by smart meters. These tools improve grid performance, customer service, and revenue management by providing more accurate insights into energy consumption and usage patterns.

- **AI/ML Integration:** Leverage machine learning and artificial intelligence to analyze vast amounts of meter data for enhanced decision-making.
- **Improved Grid Performance:** Use data-driven insights to optimize grid operations, reduce downtime, and improve efficiency.
- **Customer Service:** Provide more accurate billing, personalized services, and enhanced customer experiences through better data management.
- **Revenue Management:** Improve revenue collection by identifying inefficiencies, meter inaccuracies, and usage patterns that may affect pricing.
- **Data Insights:** Utilize advanced analytics to generate actionable insights on consumption trends, helping utilities make informed decisions.

Invited speakers include: [Insert Speaker Name and Title]

Dynamic Pricing & Load Forecasting

Smart meter technology facilitates the establishment of dynamic pricing models and accurate load forecasting. These models can improve grid capacity management by adjusting pricing according to demand and ensuring resources are used efficiently.

- **Dynamic Pricing Models:** Implement pricing strategies that fluctuate based on real-time demand, helping to balance supply and demand more efficiently.
- **Improved Load Forecasting:** Utilize meter data to create more accurate predictions of energy demand, optimizing grid performance and resource allocation.
- **Energy Efficiency:** Encourage consumers to shift their usage patterns to off-peak times, improving grid capacity and reducing strain on the system.
- **Customer Engagement:** Educate consumers on how dynamic pricing works and encourage them to adjust their usage for cost savings.
- **Grid Stability:** Reduce grid strain during peak demand periods by using smart pricing and load forecasting to proactively manage energy distribution.

Invited speakers include: [Insert Speaker Name and Title]

Power Quality Monitoring

Smart meters can be used for monitoring and identifying issues related to power quality, such as voltage fluctuations and harmonics. These tools ensure that the grid operates reliably, preventing damage to equipment and maintaining customer satisfaction.

- **Voltage Fluctuations:** Detect and address voltage instability, which can affect sensitive equipment and reduce the quality of service for consumers.
- **Harmonics Monitoring:** Identify and mitigate harmonic distortions in the grid, which can cause inefficiencies and equipment failure.

- **Real-Time Power Quality Data:** Use continuous data collection to monitor power quality metrics in real-time and prevent disruptions.
- **Enhanced Reliability:** Improve the overall reliability of the grid by quickly identifying and addressing power quality issues.
- **Customer Satisfaction:** Ensure a higher level of service quality, reducing the risk of outages and equipment damage for end-users.

Invited speakers include: Tom Fanning, Driving Change in Energy and Cybersecurity, Retired CEO, **Southern Company** - Dr. Mohammad Shahidehpour, *Professor of Electrical and Computer Engineering*, **Illinois Institute of Technology -** Jennifer M. Granholm, Former Secretary, **U.S. Department of Energy -** Michael B. Webber, Professor of Mechanical Engineering, **University of Texas at Austin**

Asset Management & Predictive Maintenance

Effective asset management and predictive maintenance are crucial for maintaining grid reliability, minimizing downtime, and optimizing operational costs. This session explores strategies such as long-term investment planning, the use of digital twins for real-time simulations, asset health monitoring, and applying predictive maintenance techniques to ensure the future efficiency of grid systems in the USA.

Long-Term Investment Planning

Long-term investment planning involves developing a strategic framework to manage grid technology investments in the USA, considering future scenarios, the interdependencies of grid components, and the complexity of emerging infrastructure technologies. This process ensures that investments are made wisely to support the evolving energy grid.

- **Future Scenario Analysis:** Consider different scenarios to anticipate future technological advancements and grid demands, preparing for future complexities.
- **Interdependencies Mapping:** Understand how different grid technologies and assets depend on each other to ensure coherent, integrated investments.
- **Infrastructure Complexity:** Address the increasing complexity of next-gen grid technologies and plan investments that align with evolving energy needs.
- **Capital Efficiency:** Optimize investment by prioritizing long-term benefits and cost-effectiveness, considering operational, environmental, and technological factors.
- **Risk Mitigation:** Develop strategies that minimize financial and operational risks by planning for the uncertain future of energy grids.

Invited speakers include: Mike Usher, Managing Director, Energy Investment, **Goldman Sachs -** David S. O'Reilly, *Managing Director, Energy & Infrastructure*, **JPMorgan Chase & Co. -** Michele M. Buckley, Managing Director, Energy & Power, **Morgan Stanley**

Digital Twins

Digital Twin technology allows the creation of real-time simulations for asset performance, enabling more efficient, reliable, and cost-effective grid management. By virtually replicating physical assets, digital twins help in understanding how assets behave under different conditions and improve decision-making.

- **Real-Time Simulations:** Create dynamic simulations to monitor asset performance and forecast behavior under various conditions.
- **Efficiency Improvements:** Optimize grid operations and asset management by identifying inefficiencies and areas for improvement through simulation.
- **Cost-Effective Management:** Reduce the need for costly trial-and-error methods by using virtual models to predict and plan for real-world outcomes.

- **Risk Reduction:** Anticipate issues before they occur by analyzing the digital twin's performance data, leading to fewer failures and better planning.
- **Asset Lifecycle Management:** Extend the useful life of assets by simulating long-term wear and tear, allowing for informed investment decisions and maintenance schedules.

Invited speakers include: Dr. Patricia Hoffman – Senior Vice President of Grid Solutions, **U.S. Department of Energy (DOE) -** Julie Blunden, Board Member Grid Decarbonization, **Nextracker Inc -** Ikponmwosa (Iyke) Idehen, Grid Automation Engineer, **ERCOT -** Thomas Overbye, Professor, Electrical & Computer Engineering O'Donnell Foundation Chair III Director, **Smart Grid Center Member, National Academy of Engineering** - Mark Lauby Senior Vice President and Chief Engineer, **North American Electric Reliability Corporation (NERC)**

Asset Health Management

Asset health management involves the continuous monitoring of asset conditions using advanced data-driven insights. This process helps optimize grid performance, extend asset life, and reduce operational disruptions by identifying potential issues before they impact operations.

- **Continuous Monitoring:** Implement a system to consistently track asset performance and health, ensuring early detection of anomalies.
- **Data-Driven Insights:** Use collected data to analyze asset performance and predict potential failures or inefficiencies.
- **Improved Operational Efficiency:** Reduce downtime and maximize the lifespan of assets by detecting issues early and making timely adjustments.
- **Preventative Action:** Shift from reactive to proactive maintenance, addressing problems before they escalate and ensuring smoother grid operations.
- **Cost Savings:** By maintaining assets at peak health, companies can avoid expensive repairs and unexpected downtime.

Invited speakers include: Danielle Schofield, Vice President Commerical Operations, **Primoris Services Corporation** - David Klein, Senior Project Manager, **Duke Energy Corporation**

Predictive Maintenance

Predictive maintenance applies data analytics and AI to predict when a failure is likely to occur, allowing for proactive maintenance. This approach minimizes unplanned downtime, optimizes cost-efficiency, and enhances grid reliability by addressing issues before they result in failure.

- **Data Analytics & AI:** Use advanced algorithms to predict asset failures based on historical data, usage patterns, and real-time monitoring.
- **Proactive Maintenance Scheduling:** Schedule maintenance based on predicted needs rather than fixed intervals, optimizing resources and reducing costs.
- **Reduced Downtime:** Minimize unexpected outages and disruptions by addressing problems before they cause significant damage.
- **Optimized Resource Allocation:** Focus maintenance efforts on high-risk areas, ensuring that labor, materials, and time are used most effectively.
- **Improved Grid Reliability:** Enhance the overall reliability of the grid by reducing the frequency and severity of unplanned outages and maintenance events.

Invited speakers include: Rajit Gadh, Professor, Director, **Smart Grid Energy Research Center (SMERC) / UCLA Samueli School Of Engineering -** Dr. Saifur Rahman, Professor, Department of Electrical and Computer Engineering, **Virginia Tech University -**

Condition-Based Maintenance

Condition-based maintenance leverages real-time data from assets to make maintenance decisions based on the actual condition of the asset. This helps ensure the longevity and efficiency of grid assets by tailoring maintenance schedules to the true needs of each component.

- **Real-Time Data Integration:** Use sensors and real-time data to assess the condition of assets, ensuring maintenance is based on actual wear and tear.
- **Tailored Maintenance:** Perform maintenance only when needed, reducing unnecessary interventions and extending the life of assets.
- **Cost Efficiency:** Focus on maintenance efforts that provide the highest return on investment, reducing unnecessary expenses and resource use.
- **Improved Asset Longevity:** By acting on condition data, assets are maintained more effectively, leading to a longer operational life and reduced risk of failure.
- **Optimized Performance:** Keep assets running at peak efficiency by addressing issues based on their actual condition rather than a predetermined schedule.

Invited speakers include: Murat Yildirim, Associate Professor, Industrial and Systems Engineering; Director, **Cyber Physical Systems Laboratory, Wayne State University -** J. Wesley Hines, Postelle Professor and Chancellor's Professor, **The University of Tennessee, Knoxville -** Nagi Gebraeel, Professor, **H. Milton Stewart School of Industrial and Systems Engineering College of Engineering -**

Big Data & Analytics

The use of big data and advanced analytics is revolutionizing how grid operations are managed. By leveraging data governance, AI, cloud integration, and advanced analytics tools, utilities can make more informed, real-time decisions, improve grid efficiency, and better plan for the future. This session explores the technologies and strategies that are shaping the future of grid management in the US energy landscape.

Data Governance

Data governance ensures that the vast amounts of data generated by the grid are properly managed, protected, and utilized to transform complex data silos into actionable insights. By establishing clear data governance policies, utilities can make better decisions in grid planning, operations, and upgrades, driving value across the energy sector.

- **Data Quality Control:** Establish standards for data accuracy, completeness, and consistency across various sources.
- **Data Security & Compliance:** Implement policies to protect sensitive grid data and ensure compliance with regulatory requirements.
- **Cross-Department Collaboration:** Break down silos and encourage data sharing across departments to drive value in grid operations.
- **Actionable Insights:** Ensure that data is not only collected but also analyzed in a way that leads to tangible improvements in grid planning and operation.
- **Improved Decision-Making:** Support better decision-making through organized, accessible, and high-quality data.

Invited speakers include: Trey Thornton, Global Client Service Partner, **EY -** Mike Juchno, Consulting Partner, Data & AI (Energy sector), **EY**

Advanced Analytics

Advanced analytics tools help utilities extract valuable insights from the vast amounts of data collected from smart meters, sensors, and renewable energy assets. These tools enable utilities to make more accurate, data-driven decisions in real time, improving grid efficiency and operational performance.

- **Real-Time Decision-Making:** Leverage analytics to support faster, more accurate decision-making on grid management and resource allocation.

- **Improved Grid Efficiency:** Use predictive and prescriptive analytics to optimize grid operations, minimize energy losses, and enhance overall efficiency.
- **Precision in Operations:** Enable more precise control over grid assets, resulting in improved reliability and lower operational costs.
- **Energy Forecasting:** Use analytics to predict energy demand and supply, improving grid balancing and reducing reliance on fossil fuel-based generation.
- **Renewable Energy Integration:** Enhance the ability to incorporate renewable energy sources into the grid by analyzing data from wind, solar, and other renewable assets.

Invited speakers include: Michael Patterson, Managing Director Innovative Leader in Data and Analytics, **Perficient's -** Holly Ausseil, Senior GIS Analyst, **Redeux Energy**

Cloud Integration

Cloud solutions enable scalable, cost-effective real-time data processing, storage, and sharing across the grid ecosystem. By integrating cloud technologies, utilities can improve collaboration, data accessibility, and business continuity in their operations.

- **Scalable Solutions:** Leverage cloud computing for scalable data processing, allowing utilities to handle growing data volumes without significant infrastructure investment.
- **Data Sharing & Collaboration:** Facilitate better collaboration between different stakeholders, improving overall efficiency in grid management.
- **Enhanced Business Continuity:** Improve business continuity by ensuring that data is securely stored and accessible even during system failures or disruptions.
- **Real-Time Data Processing:** Enable real-time data analytics and processing in the cloud to make faster, more accurate decisions.
- **Cost-Effectiveness:** Reduce costs related to on-premise infrastructure by utilizing cloud solutions for flexible, pay-as-you-go services.

Invited speakers include: Ian Foster, Director/ Professor, **Argonne National Laboratory/ The University of Chicago -**

AI-Powered Data

Artificial Intelligence (AI) and LIDAR (Light Detection and Ranging) data are powerful tools for predictive grid analysis. AI can analyze vast amounts of data to predict potential outages, optimize grid performance, and improve resilience against extreme weather events or grid failures.

- **Predictive Analysis:** Use AI algorithms to predict potential grid failures or disruptions based on historical and real-time data.
- **LIDAR Data Integration:** Utilize LIDAR technology for high-resolution imaging of grid infrastructure to identify vulnerabilities or potential hazards in the grid.
- **Grid Performance Optimization:** AI can recommend optimal grid configurations and operational adjustments based on performance data.
- **Improved Resilience:** By predicting issues before they occur, utilities can enhance grid resilience and reduce downtime during emergencies.
- **Automated Maintenance:** AI can suggest or trigger automatic maintenance actions based on predicted grid performance issues.

Invited speakers include: Nicholas Long, Senior Buildings Research and Software Engineer, PhD, **National Renewable Energy Laboratory -**

Jessica Lee, Principal Data & AI Cloud Solution Architect, **Microsoft**

Production & Demand Forecasting

AI and machine learning models can significantly improve the accuracy of demand forecasting, which helps utilities better allocate grid resources, optimize energy production, and ensure that supply matches demand more efficiently.

- **AI & Machine Learning Models:** Use advanced algorithms to predict energy demand with high accuracy, factoring in weather, seasonal changes, and consumer behavior.
- **Improved Resource Allocation:** By forecasting demand more precisely, utilities can allocate resources more efficiently and reduce wastage.
- **Energy Storage Optimization:** Accurate demand forecasting helps utilities manage energy storage systems, ensuring that excess energy is stored during low-demand periods and used when demand is high.
- **Grid Balancing:** Ensure a more stable grid by balancing supply and demand in real-time, reducing strain on the grid infrastructure.
- **Cost Savings:** Improve the financial performance of utilities by better matching energy supply to actual demand, minimizing excess generation and energy costs.

Invited speakers include: Robert B. Gramacy, Professor of Statistics, **Virginia Polytechnic and State University -**

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For more details, to propose a sessions topic or confirm as a speaker contact

Sabian Wise or Constantine Ioannides at Production@EPGSummit.com