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Abstract for an Invited Paper  
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**A Transforming Electricity System: Understanding the Interactions Between Clean Energy Technologies, Markets, and Policies**

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The U.S. electricity system is currently undergoing a dramatic transformation. State-level renewable portfolio standards, abundant natural gas at low prices, and rapidly falling prices for wind and solar technologies are among the factors that have ushered in this transformation. With objective, rigorous, technology-neutral analysis, NREL aims to increase the understanding of energy policies, markets, resources, technologies, and infrastructure and their connections with economic, environmental, and security priorities. The results of these analyses are meant to inform R&D, policy, and investment decisions as energy-efficient and renewable energy technologies advance from concept to commercial application to market penetration. This talk will provide an overview of how NREL uses high-fidelity data, deep knowledge of energy technology cost and performance, and advanced models and tools to provide the information needed to ensure this transformation occurs economically, while maintaining system reliability. Examples will be explored and will include analysis of tax credit impacts on wind and solar deployment and power sector emissions, as well as analysis of power systems operations in the Eastern Interconnection under 30% wind and solar penetration scenarios.

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