

Overview of EPRI's

39th Annual Seminar on Fuels, Power Markets, and Resource Planning

November 18-19, 2020

Virtual Event

This long-running annual EPRI seminar delivers and expands upon EPRI's research findings and explores topics of growing urgency to electric company staff and executives engaged in fuel acquisition for power plants, power plant operations, system resource planning, corporate strategy, and electricity market design and operations. Now in its 39th year, this seminar is supported and hosted by EPRI's research program on *Resource Planning for Electric Power Systems* (Project Set 178B).¹

Due to the ongoing Covid-19 Pandemic, the 2020 seminar is being held virtually online. The 2020 seminar is comprised of four sessions in total, with two, two-hour long virtual sessions to be held each day. These sessions will explore three themes:

- The Role of Natural Gas in Achieving Deep Decarbonization;
- Integrating Energy System Planning; and,
- Evolution of Carbon Pricing Proposals in Wholesale Power Markets.

Session 1: Natural Gas and Decarbonizing the Power Sector

(Wed, Nov 18; 12:00-2:00 pm Eastern)

The future price of natural gas is a key uncertainty that can be expected to have a profound impact on both near-term electric company operations and dispatch, and the evolution of the future electric capacity and generation mix and emissions. The ongoing development of vast, low-cost shale natural gas fundamentally has changed electric sector economics. Sustained low natural gas prices in recent years have upended wholesale power markets, impacted profitability of existing power plants, led to closures of coal-fired and nuclear power plants, and dramatically altered future generation investment plans.

Low prices also have created new demands for natural gas in industry and transportation, a boom in infrastructure development, and a race to develop large liquefied natural gas (LNG) export terminals in the United States and Canada. Enhanced natural gas supplies and lower prices also have helped the U.S. electric sector achieve large-scale CO₂ emissions reductions over the past decade.

However, the *future* role of natural gas in facilitating decarbonization is less clear. In this session, we will explore expectations about future natural gas supplies, demand, and pricing in North America and opportunities to reduce CO₂ emissions from natural gas-fired generation. We also will explore the potential to create a market for "green" natural gas characterized by having "low" fugitive methane (CH₄) emissions.

¹ Learn more about this EPRI research program online here - https://www.epri.com/#/portfolio/2020/research_areas/2/069228?lang=en-US .

Session 2: Integrated Energy System Planning: Part 1 — NARUC-NASEO Task Force on Comprehensive Electricity Planning (Wed, Nov 18; 2:30-4:30 pm Eastern)

In recent years, the electric power industry has been undergoing a dramatic and ongoing transformation driven by a variety of factors, including rapid deployment of large-scale variable renewable and distributed energy resources (VERs and DERs); advances in digital energy and communications technologies; increasing customer choice and control; persistent low natural gas prices and increased reliance on natural gas; and, growing awareness of the electric sector’s potential role in achieving environmental and other broad societal goals.

Traditionally, electric companies, particularly vertically-integrated investor-owned utilities (IOUs), have performed generation (G), transmission (T), and distribution (D) system planning as three separate, yet inter-related activities that are aligned with respective business units and focused on operations (i.e., day-ahead to five years-ahead timeframe).

In recent years, there has been a growing recognition that “traditional” electric sector resource planning will need to evolve so electric companies, regulators, and other stakeholders effectively can address key emerging challenges and benefit from new opportunities arising from the industry’s transformation. One of the most critical of these challenges is how to more closely integrate G, T, and D planning. Tighter integration of G, T, and D planning is needed to ensure future system reliability, and to optimize the system as a whole to minimize costs. As customer choice and behavior increasingly impact planning decisions, the integration also must extend beyond G, T, and D to modeling customer interactions.

In this session we will hear from key staff and members of the **NARUC-NASEO Task Force on Comprehensive Electricity Planning (NNTF)** who will update the Seminar participants on the Task Force’s ongoing work and plans to finalize its Action Plans and Roadmaps. In addition, these speakers will describe the Task Force’s planned future activities and how it plans to roll out its final report and Action Plans in Spring 2021.

Following this overview of the Task Force’s ongoing work plans, Arizona Corporate Commission (ACC) Chair Robert “Bob” Burns, a leading member of the Task Force, will highlight’s Arizona’s plans to transition to a more modernized Integrated Resource Planning (IRP) process that more closely aligns power system G, T, and D planning. In addition, EPRI Members who have provided technical feedback to the Task Force will offer their perspectives on the NNTF’s planned deliverables and future activities.

Session 3: Integrated Energy System Planning: Part 2 – Innovative R&D to Support Integrated Strategic System Planning (Thurs, Nov 19; 12:00 – 2:00 pm Eastern)

Future resource planning will benefit from closer interaction of planners across the entire electricity supply chain to understand how decisions at one planning level may impact other levels, and the ability to make tradeoffs between potential investments in each of these sub-systems to optimize the future overall electric power system. Increasingly, future resource planning choices will require coordination between G, T, and D planners, particularly as distribution systems integrate more DER and increase their capability to provide ancillary services to supplement or compete with bulk resources.

In this session, EPRI staff and others will discuss recent EPRI research activities focused on more closely aligning power system G, T, and D planning. First, senior EPRI staff will describe EPRI's new *Integrated Strategic System Planning Initiative* – a \$1.8 million, three-year long effort focused on developing an industry-leading modeling framework/tool(s) to analyze system integration challenges associated with doing integrated G, T, and D system planning. This effort is primarily focused on improving the integration of G/T/D software planning tools and methods to incorporate evolving climate change impacts and customer considerations for planning analysis.

Second, EPRI staff members will highlight recent cutting-edge research completed by EPRI to better understand, explore and characterize electric system “supply resiliency” and the potential impact of “high-impact, low-frequency” (HILF) events. Recently, there has been growing attention focused on the ability of electric power systems to withstand extreme events, many of which occur externally to the power system. Power system resilience typically refers to the ability of the system and its components to minimize damage and improve recovery from nonroutine disruptions, including HILF events, in a reasonable amount of time. The characterization of nonroutine events, including HILF events, nontraditional events, and externally driven events (i.e., those that occur externally to the power system but that affect the power system) can affect all aspects of power system planning and power system operations. Relevant to this discussion, these events can impact the resource adequacy contribution of different power system generation and storage resources.

System planners evaluate the resource adequacy of their generation assets to understand whether there are sufficient generation and demand-side resources to meet future system needs. Resource adequacy accounts for the availability of resources during the most critical time periods. Different metrics have historically been used to assess contributions including unforced capacity, effective load carrying capability (ELCC) and others. Typically, historic availability is used to assess future resource adequacy contribution. ELCC is increasingly used for growing set of resources including wind and solar power, as well as electric storage resources. The final presentation in this session will discuss ongoing EPRI research associated with exploring the potential impact of natural gas contingencies on electric power system resource adequacy.

Session 4: Carbon Pricing Proposals in Wholesale Power Markets

(Thurs, Nov. 19; 2:30 pm – 4:30 pm Eastern)

In recent years, there has been growing interest in the potential to incorporate CO₂ emissions pricing into the bidding and operations conducted in large, wholesale power markets in the U.S. In California, for example, the CAISO currently imposes CO₂ price adders to fossil-fired power generation that is sold and delivered into California based on the carbon emissions intensity of the power sold.

In the past few years, several other wholesale electric power markets in the U.S. (e.g., NYISO and PJM) have been exploring the potential value of adopting market-wide “carbon pricing adders” to wholesale power market bids submitted by fossil-fired generators.

For example, NYISO has developed a full-blown proposal to implement CO₂ emissions pricing to help New York State to achieve its climate and clean energy goals. In December 2018, the NYISO released its carbon pricing proposal describing a potential design to incorporate the cost of carbon emissions into

the NYISO wholesale market. In 2019, the NYISO and its stakeholders continued to refine the design of this proposal and continued to conduct outreach and build support for this effort.

PJM also has been studying the potential impacts of implementing a significant carbon price in the multi-state PJM wholesale energy market to inform stakeholders and policy-makers of the possible implications of doing this. While PJM has not proposed to establish a carbon price, it has been conducting studies and doing outreach to external parties through its stakeholder process.

And, just last month, the Federal Energy Regulatory Commission (FERC) issued a notice of proposed policy statement on Carbon Pricing in Organized Wholesale Electricity Markets. Under this proposed policy, FERC is proposing to issue a policy statement to encourage efforts to incorporate a state-determined carbon price in organized wholesale electricity markets.

In this session, we will hear from key staff members at PJM and NYISO who are directly engaged in the exploration and development of carbon pricing efforts in these respective markets. They will describe the current status of each of these carbon pricing initiatives, the studies being conducted in their respective regions to evaluate these proposals, and potential implications of FERC's proposed Carbon Pricing Policy.

Audience

This invitation-only virtual event is expected to include approximately 150 participants. Seminar participants include representatives of U.S. and International EPRI member electric companies, including investor-owned utilities (IOUs), electric generation and transmission cooperatives, independent power producers (IPPs), public power agencies, and Regional Transmission Organizations (RTOs) and Independent System Operators (ISOs). Additional participants include federal staff from the United States Department of Energy (DOE), Environmental Protection Agency (EPA), and the Federal Energy Regulatory Commission (FERC), state public utility commission staff, academic experts, and representatives of non-governmental organizations.

The seminar is hosted under the ***Chatham House rule***, so neither the identity nor the affiliation of any speaker or participant may be revealed. The seminar is not open to the press.

About EPRI

The Electric Power Research Institute (www.EPRI.com) is an independent, non-profit 501(c)(3) corporation established in 1972. We have principal offices and laboratories located in Palo Alto, Calif.; Charlotte, N.C.; Knoxville, Tenn.; and Lenox, Mass. EPRI conducts research and development relating to the generation, delivery, and use of electricity for the benefit of the public. EPRI brings together its scientists and engineers, as well as experts from academia and industry, to help address challenges in electricity, including reliability, efficiency, health, safety, and the environment. EPRI also provides technology, policy, and economic analyses to inform long-range research and development planning, as well as supports research in emerging technologies.