

AT A GLANCE

Energy, Environmental, and Climate Policy Analysis

Program 201



RESEARCH VALUE

- State-of-the-art energy-economy modeling to analyze pathways to net zero emissions and deep decarbonization and to assess the implications, for the electric sector and the economy, of energy and environmental policies (e.g., tax credits, mandates on electrification and energy efficiency, and renewables policies).
- Fundamental insights into the role of technology and the value of technological advances in achieving energy and environmental goals, including net zero and deep decarbonization.
- Independent scenario analysis, published in peer-reviewed scientific journals, that evaluate the implications of key international and domestic policy options.

MEMBER BENEFITS

- Inform company strategy and reduce business risk in the face of mounting pressure to decarbonize, achieve net zero goals, and assess resilience to climate change impacts.
- Identify cost-effective strategies for reducing greenhouse gas emissions and adapting to climate change impacts.
- Provide utilities and policymakers with crucial information for economically and environmentally sound policy and investment decisions.

Amid pressures to deeply decarbonize economy-wide energy use and the proliferation of net zero emissions targets, the electric sector is facing rapid and fundamental transformation. This program identifies and analyzes the implications of these goals for the electric sector, explores the potential transition and physical risks, opportunities, and impacts of emerging technologies and market interactions, and informs cost-effective energy and environmental policy design. It provides cutting-edge analysis on topical and strategic issues to inform electric sector and utility decision-making. Through this program, EPRI fulfills the need for rigorous and integrated analysis of how the electricity system and economy-wide energy use respond to multiple, dynamic drivers such as technology change, decarbonization, and climate impacts.

Within Energy, Environmental, and Climate Policy Analysis, EPRI maintains the state-of-the-art energy-economy model known as the US-Regional Economic, Greenhouse Gas, and Energy (US-REGEN) model. Consisting of an integrated electric sector and technologically detailed energy end use model, EPRI uses US-REGEN to analyze the evolution of electricity and economy-wide energy use under different scenarios. Among its many capabilities, EPRI uses US-REGEN to: analyze the transformation and expansion of the electric sector under different technology mixes, including deep penetration of renewables and deployment of storage technologies; assess the impacts of policy instruments such as renewable portfolio and clean energy standards; improve understanding of the economics of electrification; and evaluate trade-offs between electric and non-electric sector decarbonization. Through this program, EPRI is also working to integrate US-REGEN with more granular electric sector operations models to assess the operational reliability of a decarbonized electricity system. EPRI has applied the REGEN framework internationally, conducting analysis with models for Canada, Mexico, South Korea, and Taiwan.

Energy, Environmental, and Climate Policy Analysis research priorities change frequently as new policies emerge and technology changes. As a result, this program delivers research to members in succinct, easily digestible formats that enable decision-makers to quickly understand key research results and communicate this information and its impact to others. Through two-page "Back Pocket Insights," EPRI educates

other stakeholders on key economic insights related to policy or technology drivers as well as best practices in energy modeling. Through “P201 Perspectives,” which respond in real-time to new policy or technology developments, EPRI equips members with robust, streamlined, and actionable information that helps educate and inform their own reactions. The program offers members regular opportunities to learn about and give feedback on the research results through webcasts and working groups.

Key Activities for 2023

RESEARCH PORTFOLIO

P201B: Policy and Regulatory Insights and Analysis

This project tracks and analyzes key federal and state policy proposals and EPA regulations, including recently proposed clean energy standards, comments directly on certain proposals, and may review influential proposals from other organizations, providing insights on their rigor and quality. EPRI conducts timely analyses and assesses the potential impacts of these policies for utilities. Research results can be used by members to join and shape national and state policy conversations, as well as inform company corporate responses.

P201C: Cutting-Edge Insights on Emerging Technologies, including Electricity Storage

This project analyzes the economics of storage and other emerging technologies and conducts system analyses looking at the opportunities, risks, and challenges of technology mixes for achieving high decarbonization or net-zero targets and balancing high renewable penetration. This is the leading research program in the United States on the economics of storage and intermittent renewables for long-range capacity expansion modeling.

P201D: Technologically Detailed Insights on Electrification and Economy-wide Decarbonization

This project offers unique insights into topics such as the trade-offs between electric and non-electric decarbonization and the implications for the electric sector of economy-wide net zero policies using the US-REGEN end-use model, the only energy-economy model of the United States that projects hourly load shape changes by state through 2050. Research results provide valuable information for evaluating interactions between the electric and end-use sectors, long-range load projections, R&D prioritization, guidance for corporate strategy, and responses to stakeholder pressure for deep decarbonization.

P201E: Climate-Related Risk Analysis and Global Drivers

Electric companies serve local needs, but are impacted, both directly and indirectly, by global forces. Increasingly, multiple stakeholders, including financial and disclosure organizations, are asking electric companies to evaluate climate-related risks and opportunities in response to global climate commitments and other global drivers, including policy, technology, market trends, and socioeconomics. Many companies lack the internal resources to track the myriad developments occurring globally, or to analyze the various implications of these developments for their internal planning and climate-related risk assessment. Research results can be used to better understand possible physical risks to company assets and system operations from potential climate change and to improve understanding of technical issues that companies and stakeholders need to consider in assessing climate risk, setting climate goals, and making climate-related disclosures.

SUPPLEMENTAL PROJECTS

Opportunities beyond the annual research portfolio include:

- [Assessing Transmission Resilience to Future Climate and High Impact, Low Frequency Event \(HILF\) Risk](#)
- Customized Decarbonization Assessments
- [Scope 3 Greenhouse Gas Emissions Accounting for Electric Companies and Combined Utilities](#)
- [Exploring Climate Impacts in Utility Operations and Planning Interest Group](#)
- [Updating and Applying the Social Cost of Carbon, Methane, and Other Greenhouse Gases](#)

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