



## NEWSLETTER AND RESEARCH HIGHLIGHTS

Greetings,

Happy Holidays! We hope you and your loved ones are well. We are pleased to offer the newest installment of the Energy Systems and Climate Analysis (ESCA) newsletter.

This newsletter contains recent work on the air quality impacts of electrification, commentary on new social cost of carbon estimates, a quick insight into extreme heat events, and access to several recent presentations from ESCA researchers! Read on to learn more.

All of ESCA's publicly available work, and past announcements, can be found on the ESCA [website](#).

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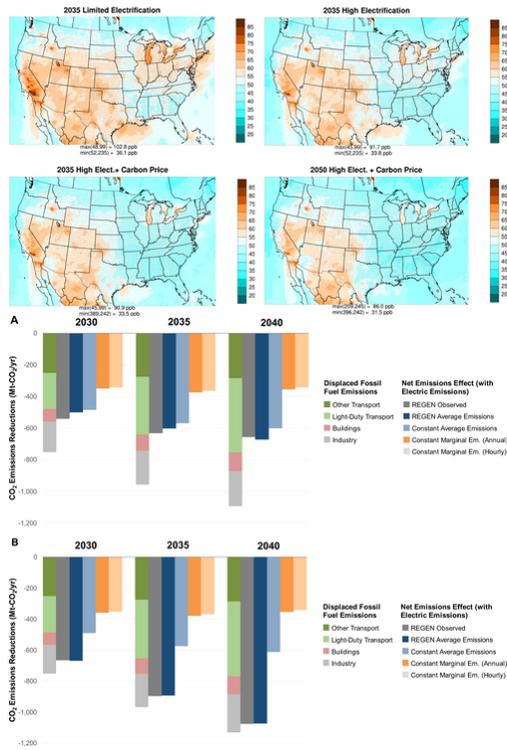
### ESCA Research Highlights

#### Economy-wide evaluation of CO<sub>2</sub> and air quality impacts of electrification in the United States

A new study from EPRI, published in **Nature Communications**, evaluates the CO<sub>2</sub> and air quality benefits of electrification by linking of a detailed energy systems model ([US-REGEN](#)) and full-form photochemical air quality model ([CAMx](#)). We find that:

- Electrification lowers CO<sub>2</sub> and improves air quality, which yields immediate and localized benefits. Decarbonization policy can amplify these trends.
- Emissions reductions from electrification produce significant ozone declines across the U.S., which lead to levels at or below the ozone NAAQS in eastern states with electrification reducing ozone by 3-13 ppb in 2035. Increased electrification, as expected into 2050, can double or triple these ozone improvements, though benefits vary by location.
- Growing activity from non-energy-related particulate matter sources—such as fugitive dust—suggests that CO<sub>2</sub> policy by itself may be insufficient to meet air quality goals.
- Commonly used short-run marginal emissions approaches underestimate reductions from electrification by 32%-91%.

For more information, please contact John Bistline [jbistline@epri.com](mailto:jbistline@epri.com) or Geoff Blanford [gblanford@epri.com](mailto:gblanford@epri.com)



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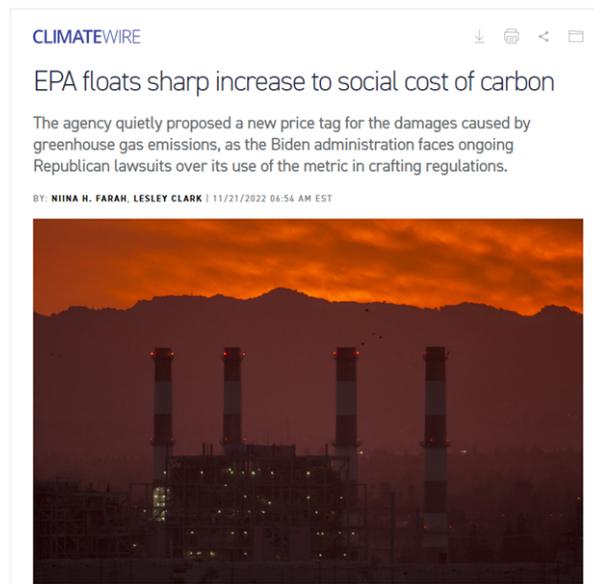
## New Commentary on Social Cost of Carbon Estimates

ESCA's Steve Rose recently published an op-ed in The Hill and was interviewed by E&E News following the EPA's release of new estimates for the social cost of carbon.



As nearly 200 countries are gathered at the UN climate summit COP27 in Egypt to discuss how to address climate change, the U.S. government is in the process of developing updated monetary estimates of the damages from emitting carbon dioxide (CO<sub>2</sub>) into the atmosphere. Specifically, the Biden administration just released a [draft new methodology and estimates](#) as part of a [proposal](#) to regulate methane emissions. Called the social cost of carbon (SCC), the estimates may influence much of what people do — from driving our cars and trucks, to heating and cooling our houses, running our factories, producing food, as well as powering our lights and phones. Given its potential impact, it is essential that we prioritize science to get it right

Estimating the SCC is a massive scientific undertaking because CO<sub>2</sub> stays in the atmosphere for hundreds of years and causes effects beyond that to how the world stores and releases carbon. As a result, estimating the SCC



- **[Putting Science First in Creating and Using the Social Cost of Carbon](#)**  
"What would putting science first mean? It means following good scientific process to ensure the scientific robustness, reliability and stability of the SCC estimates. Not doing so, leaves the estimates vulnerable to scientific, political and public criticism, even manipulation"
- **[EPA floats sharp increase to social cost of carbon](#)**  
"Now it's just really important that we go forward in a way that will give the public confidence in what's being produced"

For more information, please contact Steve Rose [srose@epri.com](mailto:srose@epri.com).

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## Extreme Heat Events Quick Insight



Several heatwaves in the last few years have tested reliability and resilience of power systems. The world continues to set new extreme heat records with increased frequency and intensity and, as global temperatures rise, these trends are projected to continue and worsen over the coming decades. In this Quick Insight, Climate READi evaluates the severity of recent extreme heat events in the context of historical records and climate change and potential future implications of extreme heat for the power system. For more information please contact Delavane Diaz [ddiaz@epri.com](mailto:ddiaz@epri.com) and Laura Fischer [lfischer@epri.com](mailto:lfischer@epri.com).

## Public Presentations: POWER, INFORMS, USAEE, ESIG



ESCA researchers have been busy presenting research results and offering insights at a number of conferences!

- At the POWER Conference, John Bistline delivered a presentation titled "[Electric Power Net Zero: is it possible?](#)"
- For the 2022 INFORMS Annual Meeting, N. Srujana Goteti presented on "[Integrated Strategic System Planning: Linking Technology Planning, Capacity Expansion, and Grid Operation and Planning](#)"
- At the USAEE/IAEE North American Conference, N. Srujana Goteti spoke on "[Coordinated Resource Expansion Planning Under High Renewable Systems](#)"
- As part of an ESIG public Capacity Expansion Modeling workshop, Nidhi Santen and David Young presented on "[Scenario Planning with US REGEN for Long-Range Transmission Planning](#)"

## Annual Seminar on Resource Planning for Electric Power Systems



**EPRI's 41<sup>st</sup> Annual Seminar on Resource Planning for Electric Power Systems** took place in Washington, D.C. on November 9-10. Click below to find the agenda along with publicly available presentations.

We were honored to host **Keynote Speaker, Commissioner Judith Jagdmann, President of the National Association of Regulatory Utility Commissioners (NARUC)**, who shared regulatory perspectives on challenges and opportunities in decarbonizing the electric utility industry. As the agenda shows, this 1.5-day event was filled with an excellent slate of expert speakers, organized around five panel-based sessions:

- Meeting Big Goals—The Intersection of Emerging Technologies and Electric Sector Resource Planning
- Technologies to Reach the Last Mile of Decarbonization
- Resource Adequacy and Resilience Considerations for Planning Zero-Carbon Power Systems
- Not 20 years Away Anymore? Recent Developments in Nuclear Energy
- Managing Risk and Uncertainties in Long-Range Planning

[View Agenda and Presentations](#)

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## Member Center

The ESCA Group conducts its research as part of EPRI Programs 178 ([Resource Planning for Electric Power Systems](#)) and 201 ([Energy, Environmental, and Climate Policy Analysis](#)). Examples of recent program-specific research includes:

- Cost Projection Factors for Resource Planning ([3002025394](#)) - Program 178
- 2022 Energy System Technology Cost and Performance Summary: Market Trends & Technology Insights ([3002024231](#)) - Program 178
- Understanding Distributional Impacts of Decarbonization: Modeling Effects of Household Income on Transport Electrification ([3002024043](#)) - Program 201
- Economic and Policy Conditions for the Deployment of Carbon Capture and Storage in the Power Sector ([3002024257](#)) - Program 201

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For more information about these programs, please contact [Nidhi Santen](#) (P178) or [David Young](#) (P201).

Thank you for your continued interest in our work. If you have any questions, please email [eea@epri.com](mailto:eea@epri.com).

Best,  
EPRI Energy Systems and Climate Analysis Group

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