Greetings,

Greetings! We hope you and your family are safe and healthy. We are pleased to offer the newest installment of the Energy Systems and Climate Analysis (ESCA) newsletter.

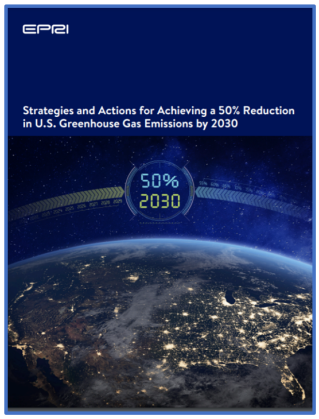
All announcements included in this email as well as past announcements can be found on the ESCA website.

ESCA Research Highlights

EPRI Analysis Identifies Strategies and Actions for Achieving a 50% Reducing in US GHG Emissions by 2030

If the United States is to reach its 2030 climate change target, carbon reductions across all sectors of the economy, including accelerated electrification, will be crucial, according to a new analysis by the Electric Power Research Institute (EPRI).

The EPRI report conveys what it could take to achieve the U.S. interim goal based on detailed modeling of economic pathways by the nonprofit research and development organization, along with its analysis of numerous third-party studies.



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Key findings include:

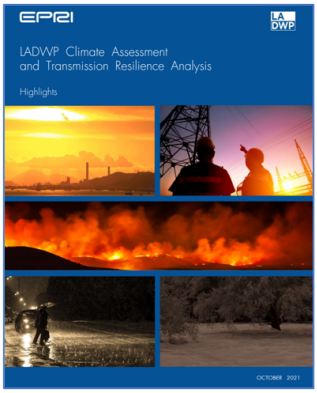
- **Achieving the 2030 U.S. goal means tripling the recent pace of decarbonization.** The electric sector builds on the 35 percent reduction it has achieved over the last 15 years, as transportation, buildings, and industry increasingly adopt clean energy technologies.
- **Electricity use increases by up to 23 percent as economy-wide dependence on clean electricity grows.** A key contributor to emissions reduction -- the U.S. electric vehicle fleet -- grows exponentially, as cost parity and incentives drive consumer adoption 20 to 30 times beyond current levels.
- **As the electric system expands to support the clean energy economy, overall energy costs decline for many households.** Increased electrification and improved energy efficiency can help reduce the overall amount customers aggregately pay for all forms of energy.

For more information, please contact John Bistline (jbistline@epri.com).

Highlight from LADWP Climate Assessment and Transmission Resilience Analysis

To better prepare for and plan for potential extreme events, EPRI worked with the Los Angeles Department of Water and Power (LADWP) to conduct a Synthesis Climate Assessment (SCA). The purpose of the SCA was to assess current and future climate conditions in the Los Angeles region, including extreme weather events, and to identify potential vulnerabilities relevant to LADWP's system.

EPRI also performed a Transmission Resilience Assessment (TRA) for three possible future scenarios of the LADWP system in the year 2030.



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The team used EPRI's risk-based Resilient System Investment Framework (RSIF) to assess the impacts of extreme contingency events and quantify the resilience of the scenarios.
Key findings include:

- Rising temperatures in Los Angeles County are a primary driver of climate-related risk to LADWP's transmission system. Heat waves, wildfire, and drought, all of which are at least partially driven by increases in temperature, can directly affect the capacity and availability of transmission assets.
- Projections of wildfire risk in various future climate scenarios indicate that wildfire probabilities in vulnerable locations may increase. Contingency analysis using historical wildfire events indicates that a lack of generation within the Los Angeles Basin exposes the LADWP system to greater load loss risk.
- Some type of dynamic generation support in-Basin is needed, especially given that several potential threats to the LADWP system could result in loss of needed generation in-feeds to in-Basin loads.

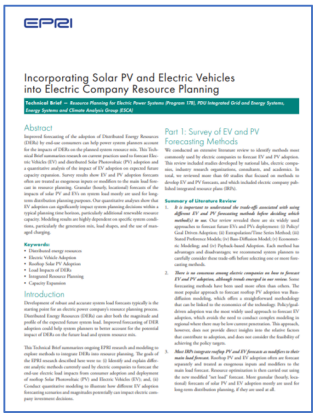
For more information contact Laura Fischer, lfischer@epri.com.

Technical Brief - Incorporating Solar PV and Electric Vehicles into Electric Company Resource Planning

Adoption of Electric Vehicles (EV) and distributed Solar Photovoltaic (PV) can significantly impact future planning decisions about electricity generation investments, especially

renewable resources, according to a new analysis by the Electric Power Research Institute (EPRI).

Developing robust and accurate system demand forecasts is typically the starting point for an electric power company's resource planning process. Distributed Energy Resources (DERs) can alter both the magnitude and profile of the expected future system load.


EPRI

Incorporating Solar PV and Electric Vehicles into Electric Company Resource Planning

Technical Brief – Resource Planning for Electric Power Systems (Program 178), PDU Integrated Grid and Energy Systems, Energy Systems and Climate Analysis Group (ESCA)

Abstract

Part 1: Survey of EV and PV Forecasting Methods

Keywords:

Introduction

READ REPORT

Key findings include:

- **Most future planning decision models do not consider detailed temporal and spatial solar PV and EV adoption**. Considering these forecasts will better utilize the "load flexibility" provided by these resources and assess distribution system implications.
- **EV adoption can significantly impact system planning decisions within a typical planning horizon.** It can impact overall capacity investments and renewable generation additions because of the changes in the load profile. Local wind/solar potential and the existing renewable generation mix will influence renewable generation additions to serve EV-driven load growth.
- **Utility-managed charging can significantly reduce incremental capacity requirements from Solar PV and EV adoptions.** A simple Time of Use rate can reduce EV-related generation capacity investment by roughly 25%.

For more information, please contact Srujana Goteti (ngoteti@epri.com).

ESCA Staff Highlight – Nils Johnson named PUF Top Innovator

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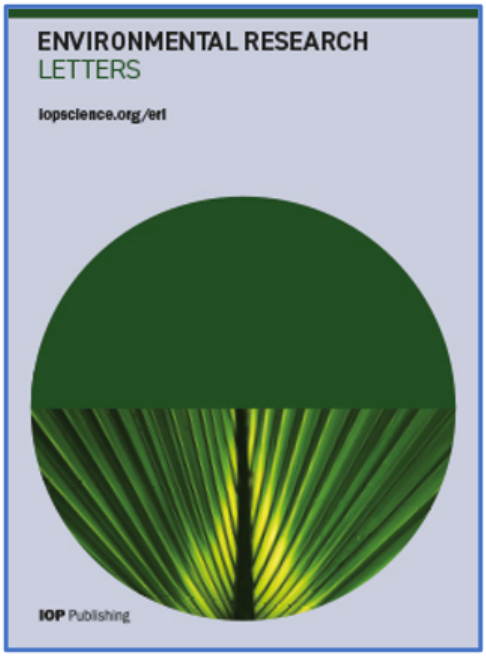
ESCA researcher, Nils Johnson, was named a Public Utilities Fortnightly Top Innovator of 2021. Johnson was recognized for his expertise in energy economy modeling and the technoeconomics of emerging technologies. His research activities include development of cutting-edge analytical tools to explore the potential for end-use electrification, assess the economics of renewables, energy storage, and other low-carbon technologies, and understand pathways to deep decarbonization.

The tools developed as part of Johnson's analyses have been incorporated into EPRI's REGEN model and are being used as part of ongoing research with other utilities. Johnson is currently working on a new model to explore the economics of decarbonizing industrial sectors, including both electrification and other mitigation opportunities using low-carbon fuels, and is leading a study to understand the potential role of long-duration energy storage.

Peer-Reviewed Publications

The ESCA group routinely submits publicly available research to peer-reviewed publications. Recent articles include:



Deep decarbonization impacts on electric load shapes and peak demand
Environmental Research Letters

READ PUBLICATION

Roadmaps to Net-Zero Emissions Systems: Emerging Insights and Modeling Challenges

Joule

READ PUBLICATION

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:

- Methods to Incorporate Climate Resilience Analysis into Transmission Planning (3002022199) – Project Set 201-E
- Guidance for Localizing Climate Change Information for Company Strategic Planning: Toward improved understanding of climate change at the local level (3002020618) – Project Set 201-E
- Historical Trends and Projected Changes in U.S. Wind and Solar Resources (3002020619) – Project Set 201-E

For more information about these programs, please contact Adam Diamant (P178) or David Young (P201).

Thank you for your continued interest in our work. If you have any questions please email eea@epri.com.

Best,
EPRI Energy Systems and Climate Analysis Group

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