Fischer, Laura

From: EPRI Energy Systems and Climate Analysis Group <eea@epri.com>
Sent: Thursday, November 12, 2020 10:30 AM
To: Fischer, Laura
Subject: ESCA Newsletter and Research Highlights – Q4

Laura,

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. Our website can now be found at http://esca.epri.com.

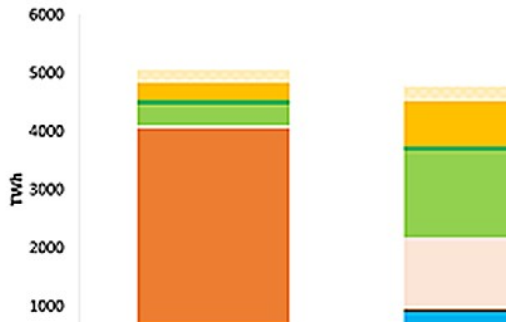
All announcements included in this email as well as past announcements can be found on the ESCA website.

ESCA Research Highlights

Forthcoming EPRI Technical Brief

Analyzing Federal 100% Clean Energy Standards: Policy Design Choices and Future Electric Power Sector Outcomes

Electric power sector clean energy standards (CES) have returned to the forefront of federal policymaking considerations, focusing this time on 100% targets. A future nationwide 100% CES is likely to drive substantial change across the sector, but the extent of this change can depend on the specific provisions of a policy, which can vary widely. Differences in timing, stringency, crediting schemes, eligible technologies, and opportunities for non-generation-based emissions reduction, among many other choices, can drive different futures.



Modeled 2050 U.S. Generation by Technology, under Business as Usual and under a 100% by 2050 Federal CES.

Using EPRI's in-house energy system modeling framework, US-REGEN, this study analyzes different national CES policy approaches by quantifying changes in future electric sector outcomes such as generation choices, compliance pathways, electricity prices, and CO_2 emissions. Three sets of scenarios investigate potential effects of:

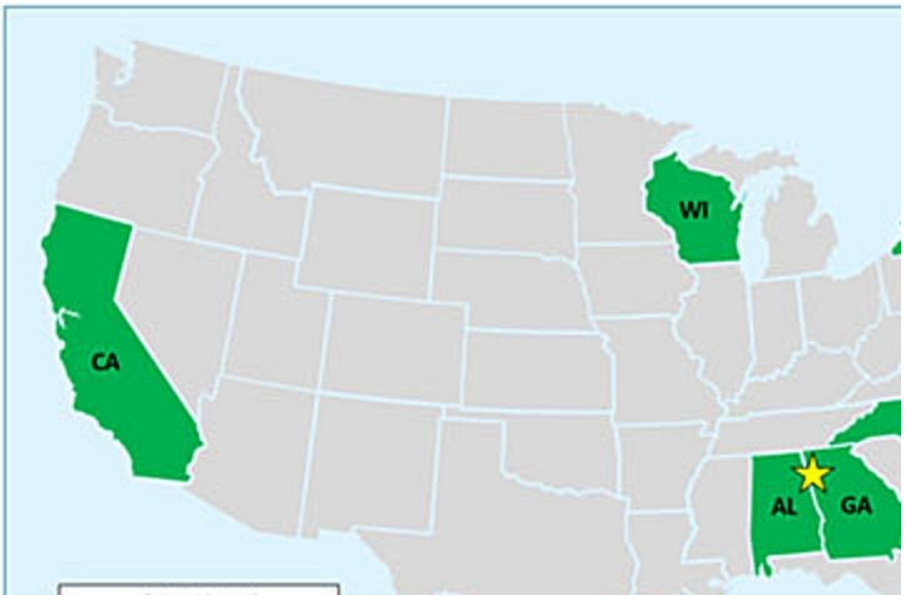
- a new 100% by 2050 Federal CES, based on major provisions within the 2020 proposed Clean Energy and Innovation Deployment Act;
- five key CES policy design choices, including an earlier 100% target, a more stringent emission intensity threshold for awarding credits, restricted credit trading, and more; and
- alternative definitions for electricity 'sales,' with and without considering energy system losses, such as those from electricity delivery and energy storage.

The technical brief is expected to be released in early December. For more information, contact Nidhi Santen, nsanten@epri.com.

Efficient Electrification in US States – Georgia and Alabama

Following the publication of the U.S. National Electrification Assessment, EPRI launched a series of assessments at the state level to evaluate the economic potential for electrification over the next three decades across the buildings, transportation, and industrial sectors. Using the US-REGEN model, EPRI evaluated electrification outcomes

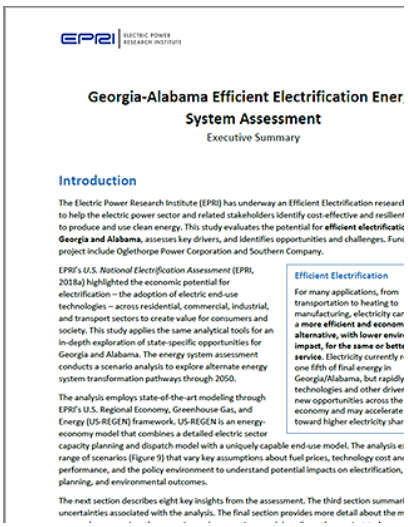
across a range of state-specific scenarios that varied different policy market, and technology drivers.



EPRI has completed state electrification assessments in the highlighted states. Studies for several other states are ongoing.

In September 2020, EPRI published the Executive Summary for the Georgia / Alabama state electrification project. The analysis finds that efficient electrification in these states, driven by technology change and consumer choice, particularly in the transportation sector, is a significant trend across a range of scenarios. Additional key insights include:

- Passenger vehicles and heavy transport drive load growth across scenarios, though the extent of these trends depend on future cost declines.
- Space heating electrification impacts load shapes more than total load by shifting the electricity system from summer to winter peaking.
- Electrification will likely be accompanied by falling final energy and CO_2 emissions across the economy.


EPRI ELECTRIC POWER RESEARCH INSTITUTE

Georgia-Alabama Efficient Electrification Ener
System Assessment
Executive Summary

Introduction

The Electric Power Research Institute (EPRI) has underway an Efficient Electrification researd to help the electric power sector and related stakeholders identify cost-effective and resilien to produce and use clean energy. This study evaluates the potential for efficient electrificatic Georgia and Alabama, assesses key drivers, and identifies opportunities and challenges. Fun project include Oglethorpe Power Corporation and Southern Company.

EPRI's *U.S. National Electrification Assessment* (EPRI, 2018a) highlighted the economic potential for electrification – the adoption of electric end-use technologies – across residential, commercial, industrial, and transport sectors to create value for consumers and society. This study applies the same analytical tools for an in-depth exploration of state-specific opportunities for Georgia and Alabama. The energy system assessment conducts a scenario analysis to explore alternate energy system transformation pathways through 2050.

The analysis employs state-of-the-art modeling through EPRI's U.S. Regional Economy, Greenhouse Gas, and Energy (US-REGEN) framework. US-REGEN is an energy-economy model that combines a detailed electric sector capacity planning and dispatch model with a uniquely capable end-use model. The analysis e range of scenarios (Figure 9) that vary key assumptions about fuel prices, technology cost an performance, and the policy environment to understand potential impacts on electrification, planning, and environmental outcomes.

The next section describes eight key insights from the assessment. The third section summar uncertainties associated with the analysis. The final section provides more detail about the m

Efficient Electrification

For many applications, from transportation to heating to manufacturing, electricity ca a more efficient and econom alternative, with lower envi impact, for the same or bett service. Electricity currently one fifth of final energy in Georgia/Alabama, but rapidly technologies and other drive new opportunities across the economy and may accelerate toward higher electricity shar

View Report

- Extended operation of the existing nuclear fleet is important to support electrification and lower emissions.

Reports are also available for the completed New York, California, and North Carolina electrification assessments. EPRI's electrification study in Wisconsin was featured in WEC Energy's Climate Report.

ESCA Staff Highlights

ESCA Researcher Recognized as "Top Innovator of 2020"

ESCA researcher and lead US-REGEN modeler, Geoff Blanford, was recently recognized among Public Utilities Fortnightly's, "Top Innovators of 2020".

Dr. Blanford was interviewed about his research modeling the economic potential of technologies that can support economy-wide decarbonization and electrification. Specifically, Dr. Blanford is exploring what technologies, such as hydrogen, could be part of a cost-effective transition to low or net-zero emissions by 2050. He is also leading the modeling for EPRI's new Low Carbon Resources Initiative (LCRI) by using integrated economic analysis to understand the role different technologies can play in achieving deep decarbonization goals.

Read Article

ESCA researchers contribute to upcoming IPCC Sixth Assessment Report

John Bistline
jbistline@epri.com

Delavane Diaz
ddiaz@epri.com

David McCollum
dmccollum@epri.com

Steven Rose
srose@epri.com

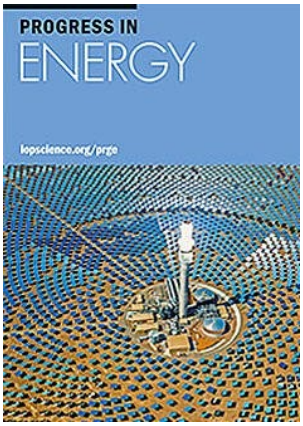
EPRI researchers John Bistline, Delavane Diaz, David McCollum, and Steven Rose are currently participating as co-authors for the IPCC Sixth Assessment Report, due in 2021-2022. As EPRI's leading research group for climate-related topics, ESCA values the opportunity to engage in international scientific collaboration that defines the boundaries of knowledge and identifies priority research frontiers to advance. Participation in this forum facilitates EPRI input into an influential climate forum and elevates EPRI research and expertise to global and cross-sectoral conversations. EPRI also leverages its participation to inform future research on critical topics such as climate risk, power system resiliency, decarbonization and low-carbon fuels, and electrification.

For more information about ESCA's IPCC participation, please contact any of the researchers above.

Peer-Reviewed Publications

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

[COVID-19 recovery funds dwarf clean energy investment needs]



Energy storage in long-term system models: A review of considerations, best practices, and research needs

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:

- Lithium Ion Battery Storage Ongoing Cost Study and Estimating Tool – Project Set 201-C (3002018500)
- Understanding Firm Hybrid Resources: Creating Firm Electric Power from Wind and Solar with Storage (3002018415) – Project Set 201-C and Project Set 178-A
- Incorporating Distributed Energy Resources (DERs) into Resource Planning: Solar PV and Electric Vehicles – Annotated Literature Review (3002018502) – Project Set 178-B
- The 6th Assessment Report of the Intergovernmental Panel on Climate Change (IPCC): Importance, EPRI Participation, and Opportunities (Webcast) – Project Set 201-A

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

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

Electric Power Research Institute, 3420 Hillview Avenue, Palo Alto, CA 94304, USA, 650-855-2121

Unsubscribe Manage preferences