November 2020 Newsletter and Research Highlights

The ESCA group sent out the fourth installment of its 2020 quarterly newsletter in November 2020. Download the PDF version of the November 2020 newsletter. If you would like to sign up for the ESCA public mailing list, please email eea@epri.com.

Forthcoming EPRI Tech 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.

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 CO2 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 February. 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.

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 CO2 emissions across the economy.
- 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.

ESCA researchers contribute to upcoming IPCC Sixth Assessment Report

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