EPRI | ELECTRIC POWER RESEARCH INSTITUTE

March 2021

CUSTOMER TECHNOLOGIES NEWSLETTER

Dear Customer Technologies Program Advisors,

The 2021 Virtual PDU Winter Advisory & Sector Council Meetings took place February 22nd through March 5th and we want to thank all of you that were able to attend. As we get more webcast interactions under our belt, I am happy to see the level of utility feedback increasing as well! Your input on the program's research is invaluable. If you weren't able to join these webcasts, the presentations and recordings are posted on the Program 170 webpage. The team is excited about our 2021 project line-up and we're looking forward to sharing progress with you at our mid-year webcasts.

We hope to see all of you in-person soon. In the meantime, please don't hesitate to reach out at any time with questions or comments.

Ron Domitrovic
Customer Technologies Program Manager
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RECENTLY PUBLISHED PRODUCTS

- Emerging Heat Pumps for Residential Space Conditioning: Laboratory Testing of a Variable-Capacity Heat Pump – 3002018560 and 3002018559
- Laboratory Assessment of Smoke and Carbon Monoxide Detectors – 3002020269
- Evaluation of Dual Fuel Residential Space Conditioning with Heat Recovery Ventilator: Phase 1 – Final Summary of Results – 3002020144
- Controllable Water Heater Load Simulator: Demand Response Emulation and Distributed Energy Resources Integration Tool – 3002017649
- Electric End Use Load Disaggregation with AMI: Model Framework and Web Tool version 1.0 – 3002017655
- Load Shape Library Version 8.0 Technical Update – 3002018167
- Strategies and Models for Mass Market Flexibility: Enabling the Impactful Customer – 3002018514
- Load Shapes for Residential Variable Capacity Space Heating and Cooling – 3002018525 and 3002018526

FEATURED RESEARCH

Quick Insight: Cold Climate Heat Pumps – 3002020864
Base Program Product – Published March 2021

How can heat pumps (HPs) support decarbonization of residential space heating in cold climates, what are the latest technology advances to enable cold climate HPs, and what are their barriers to adoption? This whitepaper describes EPRI's research on challenges for, and advancements in, cold climate heat pumps. Currently available products are shared along with promising data from the Next Gen Heat Pump project field sites. Driven by advancements in HP technology, electrification, and polar vortex events in recent years, manufacturers have started to offer products that are capable of sustained and productive operation well below 5°F.

Heat Pumps and End-Use Resources in Grid Emergencies – 3002020880
Base Program Product – Coming Soon!

Increasing frequency of extreme weather events in the United States over the past five years have caused large-scale power outages and electrical infrastructure damages costing the economy tens of billions of dollars each year. Grid resilience is becoming increasingly important as climate change increases the frequency and intensity of severe weather. The recent extreme cold weather-related outages in Texas illustrate the need for prudent planning and investment in a flexible, resilient electric grid. This whitepaper describes the customer technologies and tools that have the potential to deliver significant value to grid operators and serve as flexible resources during grid emergencies.

PRODUCTS IN DEVELOPMENT

- Heat Pumps and End-Use Resources in Grid Emergencies
- Quick Insight: Characteristics and Implications of Indoor Air Quality Control in Commercial Buildings using Filtration Technologies
- 2020 Customer Technologies Summary of Deliverables
- 2021 Base Project Overview Slidedeck

UTILITY MEMBER RECOGNITION

Extending Gratitude to

Jim Leverette

Southern Company (Alabama Power)

Jim Leverette has humbly served as a Program Chair for Program 170 for the past few years. Last year, Jim took on a new position as a Program Manager within Alabama Power Company and is transitioning out of his previous responsibilities. While Jim will continue to provide input to this program, he will no longer serve as a Program Chair. We want to express our gratitude to Jim for sharing his time, expertise, and enthusiasm in shaping our program over these years. Jim's support of the program and consistent, constructive feedback will be greatly missed. We wish him the very best in his new position!

ADVISORY MEETING MATERIALS

MONDAY – Program Overview & Project Set D: Technology Transfer
TUESDAY – Project Set A: Energy Analytics & Market Insights
WEDNESDAY – Project Set E: Technology Evaluation
THURSDAY – Project Set X: Application Tool & Technology Development
FRIDAY – Program 170 Collaborative Supplemental Projects

2021 BASE PROJECTS

PSet A: Load Shape Library, Load Disaggregation Model and Tool, and Resource Adequacy for Mass Market Flexibility: Enabling Customer Impacts on Reliability Costs

PSet D: Technology Readiness Guide, Topical Quick Insights briefs, Customer Technologies Research website, high-value report infographics, Industry update whitepapers, Program overviews and communications

PSet E: EC Motors for Furnace Fan Retrofit, Feasibility Studies of Wall-Mounted HPWHs, Flexibility Characterization and Standards Advancement, Lifecycle Evaluation of Lighting Technologies

PSet X: Real-Life Performance of a High-Voltage DC VCHP, Data-driven Load Diagnostics: Utility Requirements and Perspectives for Programmatic Treatment, Water Energy Tool (WET) Dashboard, Thermal Calculators

COLLABORATION CORNER

End-Use Electrification Considerations for Premise Service Sizing in Residential Applications Supplemental Project – *Coming Soon!*

Accelerating adoption of electric end-use technologies in residential premises, such as electric vehicles and heat pumps for space conditioning and water heating, are resulting in questions about the adequacy of existing electrical service size to accommodate expansion. This project intends to facilitate the move toward electrification by providing a database of premise service capacity and how the existing stock can accommodate electric end-use expansion, particularly in higher power devices like HVAC, water heating and car charging. The database will allow stakeholders to better target applications to specific regions, and applications to premises. This new supplemental project is a collaborative effort between Program 170, Program 18, Program 182, Program 199, and Program 204.

EPRI STAFF PROFILE

Have you met **Aaron Tam**? Aaron joined EPRI in October 2018. He is based in the Palo Alto office and his primary research focus is on energy efficient thermal systems. His work at EPRI includes evaluating thermal energy storage in space conditioning and demonstrating low-GWP refrigerant based technologies.

Prior to EPRI, he received his Master of Science in mechanical engineering from Purdue University and his Bachelor of Science from Case Western Reserve University. Aaron is from Miami and grew up in Hong Kong. He was a college swimmer and enjoys hikes and cookouts.

UPCOMING INDUSTRY EVENTS

PLMA Spring Conference, VIRTUAL, May 10–12, 2021

2021 ASHRAE Annual Conference, VIRTUAL, June 26–30, 2021

LightFair 2021, October 25–29, 2021, New York, New York

UPCOMING EPRI EVENTS

Electrification 2021 Virtual Forum Series, May 17–June 30, 2021

PDU Virtual Fall Advisory & Sector Council Meetings, September 13–24, 2021

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