Panel 1: Residential Buildings: Technologies, Design, Operations, and Industry Trends (Room: HEATHER) Panel Leaders: Carter Dedolph, CenterPoint Energy and Bo Shen, Oak Ridge National Laboratory			
Date	**Session**	**TITLE**	**LEAD AUTHOR, ORGANIZATION**
Mon 8/5	**Session 1** **8:30 - 10:00 am** 120 V Direct Plug-n Heat Pump Water Heaters	*How to Apply 120V HPWHs for Residential and Light Commercial Applications*	Douglas Lindsey, EPRI
		"Max-tech FHR": What is the maximum technically achievable water delivery capacity from a single 120 V plug?	Kyle Gluesenkamp, Oak Ridge National Laboratory
		Best Practices for Hot Water Distribution Systems in Multifamily Buildings: A Comparative Evaluation of Balancing Methods	Mehdi Zeyghami, Pacific Gas & Electric Company
	Session 2 **10:30 am - 12:00 pm** Low GWP Refrigerants	*Cool Refrigerant Developments for a Warming World: Low GWP HVAC Refrigerant Regulations and Technologies in US and Global Markets*	Bill Goetzler, Guidehouse
		Energy Modeling and Analysis of Dual Fuel Heating Systems in Single Family Homes	Saurabh Shekhadar, ICF
		Field Evaluation of Affordable Low GWP Residential Heat Pumps	Curtis Harrington, UC Davis Western Cooling Efficiency Center
Tues 8/6	**Session 1** **8:30 am - 10:00 am** Cold Climate Heat Pumps and Load Response	*Rising up to the Challenge: Cold Climate Heat Pumps in the Field*	Vrushali Mendon, Pacific Northwest National Laboratory
		Load Shifting with Ductless Heat Pumps in Rural Cold Climates	Samuel Rosenberg, Pacific Northwest National Laboratory
		Low-Load Efficient Heat pumps - A Field Data and Product Teardown exploration of why do some heat pumps excel under part-load conditions	Christopher Dymond, Northwest Energy Efficiency Alliance
	Session 2 **10:30 am - 12:00 pm** Panel on the Panel (limits and opportunities of electric panels)	*A Comprehensive Survey of Electrical Panel Capacities in U.S. Single-Family Homes and Implications for Nationwide Electrification*	Sadia Gul, Lawrence Berkeley National Laboratory
		Let Me Upgrade You	Courtney Golino, Guidehouse
		Electrical Service Panel Capacity in California Households with Insights for Disadvantaged Communities	Brennan Less, Lawrence Berkeley National Laboratory

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Wed 8/7	**Session 1** **8:30 am - 10:00 am** Heat Pumps Swing Both Ways: Replacing ACs, Furnaces, and Water Heaters	*Better than a Dupe: How to Use Heat Pumps for AC Replacement*	Samantha Hill, Center for Energy and Environment
		Retrofit Market Decarbonization with Plug-In HPWHs: California-wide Field Study Results and Market Commercialization Recommendations	Amruta Khanolkar, TRC
		Using Connected Boiler Data to Accurately Quantify Overheating and Energy Savings from Outdoor Air Reset (OAR) Curve Changes	Kurt Roth, Fraunhofer USA
	Session 2 **10:30 am - 12:00 pm** Thermal Storage and Grid Resilience	*Retrofittable Thermal Switches for Dynamic Building Envelopes Integrated with Thermal Energy Storage*	Ravi Kishore, National Renewable Energy Laboratory
		Development and Testing of an Advanced Cascaded Thermoelectric Residential Heat Pump	Don Shirey, EPRI
		Variable-speed heat pumps improve grid resilience	Don Shirey, EPRI
Thurs 8/8	**Session 1** **8:30 am - 10:00 am** Heat Pump Technologies for Low Income Families	*Resident Energy Experiences in a Low-Income Multifamily Community (Detroit, MI): A Study of Energy Consumption, Health, and Quality of Life*	Madeline Miller, University of Michigan
		Braiding utility, state, and federal funding with comprehensive energy efficiency projects to drive carbon reduction goals in low-income multifamily housing.	Natalia Sudyka, Eversource
		Dual Climate Case Study on HVAC Energy Efficiency and Comfort in Manufactured Housing	Karthik Panchabikesan, Florida Solar Energy Center
	Session 2 **10:30 am - 12:00 pm** Heat Pump Water Heaters for Load Shifting	*Heat Pump Water Heater Daily Load Shifting: Advanced Load Up and Evaluation Challenges*	Amelie Besson, Association for Energy Affordability
		Eliminating the Swing Tank and Other Design Considerations in Large-Capacity CO2 Heat Pump Water Heating	Andrew Brooks, Association for Energy Affordability
		Field Study of 120-volt Heat Pump Water Heaters in the Big Easy	Joshua Butzbaugh, Pacific Northwest National Laboratory

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Fri 8/9	**Session 1** **8:30 am - 10:00 am** Electrification at Scale	*Leveraging NREL's ResStock & ComStock Dataset to Evaluate Building Stock Electrification*	Jared Landsman, Energy & Environmental Economics
		Honda Smart Home US: Multi-function heat pumps before they were cool.	James Haile, Frontier Energy
		An Affordable, Minimum-carbon Hybrid Heat Pump with a Grid-Responsive Retrofittable Controller	Zhenning Li, Oak Ridge National Laboratory
	Session 2 **10:30 am - 12:00 pm** Multi-functional Heat Pumps	*Can multi-function heat pumps with low-GWP refrigerant effectively decarbonize heating for low-income homes?*	Subhrajit Chakraborty, University of California, Davis
		Residential Integrated Heat Pump to Meet All the Home Comfort Needs	Bo Shen, Oak Ridge National Laboratory
		Residential Heat Pump with 3-Pipe Heat Recovery for DHW and Space Conditioning - Energy and Performance Results and Findings	Edward Louie, Pacific Northwest National Laboratory