

IEEE Power and Energy Society Entity Annual Report

2022

Entity: Smart Buildings Loads and Customer Systems Technical Committee

Website: <https://site.ieee.org/pes-sblc/>

Chair: Johanna Mathieu, University of Michigan

Vice-Chair: Yashen Lin, National Renewable Energy Laboratory

Secretary: Qun Zhou, University of Central Florida

Immediate Past Chair: Ron Melton, Pacific Northwest National Laboratory

1. Significant Accomplishments:

IEEE P2781 – Guide for Load Modeling and Simulations for Power Systems was approved by IEEE SA and published in August 2022.

IEEE P2783 – Guide for Application of Quick Response Systems of Customer-Side Loads in Modern Power Grids was approved by the Loads SC in November 2022. SBLCS AdCom voted in January 2023 to move P2783 to IEEE SA for balloting.

IEEE P2418.5 Blockchain in Energy Standards draft is 90% completed. It is pending editorial and IEEE SA compliance check before going to Ballot in 2023.

The committee coordinated 12 hours of panels at the IEEE PES GM 2022 and two panels at the 2022 IEEE T&D conference. The committee also handled the review of papers for the 2022 IEEE T&D conference (3 papers), 2023 IEEE Grid Edge conference (4 papers), and the 2023 IEEE PES GM (48 papers). For the IEEE PES GM 2023, 8 panel proposals were submitted to the committee and 5 (corresponding to 10 hours) were accepted.

Smart Buildings and Customer Systems Subcommittee established a new Task Force on “Low Carbon Connected Communities.”

2. Benefits to Industry and PES Members from the Committee Work:

The committee, through its subcommittees, task forces, and working groups addresses specific topics of concern related to the edge of the grid and integration at grid boundaries, for example, building to grid integration, and the related technologies. These activities are often interdisciplinary and based on a variety of technologies, so there is a rich interaction between the SBLCS groups and related groups in IEEE PES and beyond.

3. Benefits to Volunteer Participants from the Committee Work:

Volunteer participants are able to engage in the interdisciplinary work of the committee and to help shape the activities through the panel sessions organized for the PES GM.

4. Recognition of Outstanding Performance:

- Dr. Ron Melton for chairing the 2022 and 2023 IEEE PES ISGT NA conference.
- Dr. Jizhong Zhu for leading several SBLCS standards activities.

5. Coordination with Other Entities (PES Committees, CIGRE, standards, etc.):

- Committee chair Dr. Johanna Mathieu serves on the Editorial Board of IEEE Transactions on Control of Network Systems and the Conference Editorial Board and Technology Conferences Editorial Board for IEEE Control Systems Society. She is also an active participant in the IEEE Control System Society Technical Committee on Smart Grids.
- Past chair Mr. Shawn Chandler serves on the Editorial Board of the IEEE Internet of Things Magazine.
- Past chair Dr. Ron Melton served as the Conference Chair for the IEEE PES ISGT NA 2022 Conference and has continued as the Chair for ISGT NA 2023. Dr. Farrokh Rahimi was the Technical Program Chair for ISGT NA 2022 and is serving as the Vice Chair for ISGT NA 2023.
- Dr. Ron Melton and Dr. Farrokh Rahimi have been selected to represent the IEEE PES on the Governing Board for the new IEEE Blockchain Technical Community starting in January 2023.
- Committee secretary Dr. Qun Zhou and TCPCs Dr. Bishnu Bhattarai and Dr. Sumit Paudyal serve on the Editorial Board of IEEE Transactions on Smart Grid and IEEE Power Engineering Letters.
- Smart Buildings and Customer Systems SC chair Dr. Linqun Bai serves on the Editorial Board of IEEE Transactions on Sustainable Energy and IEEE Power Engineering Letters.
- Loads SC past chair Dr. Mads Almassalkhi serves on the Editorial Board of IEEE Transactions on Power Systems and IEEE Power Engineering Letters. He is also chair of the IEEE Control System Society Technical Committee on Smart Grids.
- Architecture SC Chair Dr. Masoud H. Nazari serves on the Technology Conferences Editorial Board for IEEE Control Systems Society. He also serves on the IEEE ISGT NA Review Committee and will be a panelist for the PSOPE T&I Subcommittee on Emerging IoT Applications in Power Systems.
- Loads SC past chair Dr. Jizhong Zhu serves on IEEE SMC Standard Committee, as well as IEC standards groups: IEC TC 22/SC 22F AHG - Performance of power electronic reactive power shunt compensators in high-voltage alternating current (HVAC) systems, and IEC TS 63189-1 ED1 Virtual Power Plants- Part 1: Architecture and functional requirements. He is also chair of IEEE PES China Chapters Council (PCCC) SBLCS Satellite Committee, and member of CIGRE.
- The Smart Buildings and Customer Systems SC has been coordinating with the American Society of Heating, Refrigerating, and Air-conditioning Engineers (ASHRAE).

6. New Technologies of Interest to the Committee:

The committee is interested in new technologies related to distributed systems integration, integration and interconnection of distributed energy resources at the edge of the electric power system or on or within customer premises, technologies associated with automation of building energy systems and controls (“smart buildings”) including commercial and residential buildings and loads, associated

technologies for implementing such systems, for example, communications technologies and computer technologies including machine learning and distributed ledgers.

7. Global Involvement & YP Involvement

Total Number of committee members	Number of Young Professionals (under 35 years of age) – Including committee & subcommittee	Officers from regions 8,9 and 10	Subcommittee officers from regions 8, 9 and 10	Subcommittee members from regions 8,9, and 10
143	40	0	2	71

8. Problems and Concerns:

N/A

9. Significant Plans for the Next Period:

- a. Loads SC will be handling the PAR Study on Electric Vehicle Charging Load Prediction on behalf of SBLCS. The scope of this study is to stipulate the basic technical requirements of electric vehicle load forecasting for dispatching systems and load aggregation platforms. It includes forecasting scope, data sources, charging load data correction, charging load analysis, sensitivity analysis of charging load influencing factors, short-term charging load forecasting, and super short-term charging load forecasting. At the same time, this guide specifies the requirements for statistical analysis, predictive evaluation, and functional interface.
- b. Active participation in the organizing committee for IEEE PES Transactive Energy Systems Conference. The 2022 conference included the GridWise® Architecture Council in partnership with IEEE for the planning and execution of the conference. The IEEE sponsor is IEEE Smart Grid; however, IEEE PES SBLCS members are also heavily involved.

Submitted by: **Johanna Mathieu, IEEE PES SBLCS Chair**

Date: Jan. 31, 2023