

IEEE Power and Energy Society Entity Annual Report

2021

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 – Load Modeling and Simulation – guide was balloted and approved. It is now with the IEEE SA RevCom.

The Smart Buildings and Customer Systems SC had been inactive in 2020. SBLCS found a new chair – Dr. Linqun Bai – who has re-energized this SC. Membership, meetings, and activities are expanding including the creation of two task forces, one on Grid-interactive Efficient Buildings and one on Connected Communities. The SC has also made established with other professional communities such as ASHRAE.

The committee took responsibility for P2418.5 – Blockchain in Energy -- working group in December 2020. This had been formed under the IEEE SA Corporate Advisory Group (CAG) as an entity standard working group. The SBLCS AdCom moved the working group into SBLCS within the Architecture Subcommittee. The working group is now an individual working group enabling much broader participation by interested parties.

Past Loads SC chair Dr. Mads Almassalkhi and committee chair Dr. Johanna Mathieu worked with IEEE PES staff to prepare a Trending Technology topic on “Intelligent Electrification” that was posted in January 2022.

Three papers have been reviewed for the T&D Conference 2022. The committee also organized two panels. Thirty-four papers have been reviewed for the PES GM 2022 with each having three reviewers assigned. The committee also organized five panels (one 4-hour panel, four 2-hour panels).

IEEE PES China Chapters Council Smart Buildings, Loads and Customer Systems Satellite Committee was formed and held an inaugural meeting in December.

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:

- Recognition of the outstanding performance of Dr. Linqun Bai for his re-energization and leadership of the Smart Buildings and Customer Systems Subcommittee.

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

- Committee chair Dr. Johanna Mathieu serves on the Editorial Board of IEEE Transactions on Power Systems and IEEE Power Engineering Letters. 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 is serving as the Conference Chair for the IEEE PES ISGT 2022 Conference.
- Committee secretary Dr. Qun Zhou and TCPCs Dr. Bishnu Bhattacharai and Dr. Sumit Paudyal serve on the Editorial Board of IEEE Transactions on Smart Grid and IEEE Power Engineering Letters.
- Architecture SC co-chair Dr. Amro Farid is the PES Liaison to the IEEE Smart Grid and IEEE Smart Cities committees. He is also an active participant in the IEEE Control System Society Technical Committee on Smart Grids.
- 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 will begin serving on the Editorial Board of IEEE Transactions on Power Systems and IEEE Power Engineering Letters in Jan 2022. He is also co-author on an IEEE Spectrum article coming out soon on “Packetizing the Power Grid.”
- Architecture SC co-chair Dr. Masoud Nazari serves on the Technology Conferences Editorial Board for IEEE Control Technology and Applications.

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.



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New task forces within the subcommittees include 1) Behind the Meter Distributed Energy Resources, 2) Grid-interactive Efficient Buildings, and 3) Connected Communities. There is also interest in electric vehicle load prediction.

7. Global Involvement

PES is looking to increase involvement with members from Regions 8, 9 and 10 (Africa, Europe, Middle East, Latin America, Asia and Pacific). Please provide the following information.

Total Number of committee members ~150	Officers from regions 8,9 and 10 0	Subcommittee officers from regions 8, 9 and 10 0	Subcommittee members from regions 8,9, and 10 ~50
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9. Significant Plans for the Next Period:

- a. Continuation of effort for guide IEEE P2783 – Quick Response Systems – extensive review and discussion is taking place. The outcome is uncertain.
- b. Continuation of effort for working group P2418.5 – Blockchain in Energy – first work products are expected soon.
- c. Consideration of a PAR on electric vehicle load prediction.
- d. Active participation in the organizing committee for IEEE PES Transactive Energy Systems Conference. The 2022 conference includes 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. 16, 2022