

# IEEE Power and Energy Society Entity Annual Report

**2024**

**Entity:** Energy Internet Coordinating Committee

**Website:** <https://cmte.ieee.org/pes-eicc/>

**Chair:** Prof. Mohammad Shahidehpour, Illinois Institute of Technology, USA, IEEE Fellow

**Vice Chair:** Prof. Qinglai Guo, Tsinghua University, China, IEEE Fellow

**Secretary:** Dr. Xinwei Shen, Tsinghua Shenzhen International Graduate School, China, SMIEEE

**Program co-Chair:** Dr. Luo Xu, Princeton University, USA

**Program co-Chair:** Chenhui Lin, Tsinghua University, China

## 1. Significant Accomplishments:

- 1) We held an Annual Meeting at PES GM 2024, gathering 16 experts and scholars from different countries and regions.
  - Prof. Qinglai Guo (TCPC then) welcomed all attendees on behalf of Prof. Hongbin Sun (EICC chair then), and chaired the meeting, gave a brief introduction to the EICC structure.
  - Prof. Mohammad Shahidehpour (vice chair then) gave a welcome speech
  - Every attendee gave a brief self-introduction.
  - We reported and discussed the EICC annual activities
  - Task Force Report and Comments are also included
  - A call for task force proposals
  - A call for panel proposals on PES GM 2025
  - Future plan discussions



**EICC Officers/Steering Committee/Liaisons**

**Chair:** Prof. Hongbin Sun, Tsinghua University, China, IEEE Fellow  
**Vice Chair:** Prof. Mohammad Shahidehpour, Illinois Institute of Technology, USA, IEEE Fellow  
**Secretary (& Treasurer):** Dr. Sharon (Xuan Yuan) Wang, State Grid Corp. of China  
**Committee Program Chair:** Prof. Qinglai Guo, Tsinghua University, China, SMIEEE  
 (Webmaster) Prof. Xinwei Shen, Tsinghua Shenzhen International Graduate School(SIGS), China, SMIEEE

Steering Committee	Liaisons from TCs																															
<ul style="list-style-type: none"> <li>• Zhengyu Sun (Chair, State Grid, China)</li> <li>• Mohammad Shahidehpour (IIT, USA)</li> <li>• Jovica Milanovic (The University of Manchester, UK)</li> <li>• Nikos Hatziargyriou (NTUA, Greece)</li> <li>• Weijiang Chen (CEPRI, China)</li> <li>• Hong Gao (ABB)</li> <li>• Anjan Bose (Washington State University, USA)</li> <li>• Xiaoxin Zhou (China Electric Power Research Institute)</li> <li>• Hongbin Sun (Tsinghua University, China)</li> <li>• Shijie Cheng (HUST, China)</li> <li>• Jun Yu (State Grid, China)</li> <li>• Dean Sharafi (AEMO, Australia)</li> </ul>	<table border="0" style="width: 100%; border-collapse: collapse;"> <tr><td style="font-size: small;">Name</td><td style="font-size: small;">TCs</td><td style="font-size: small;">Affiliation</td></tr> <tr><td>Prof. Kai Strunz</td><td>EDAPG</td><td>TU Berlin</td></tr> <tr><td>Dr. Pengwei Du</td><td>PSOPE</td><td>The Electric Reliability Council of Texas, USA</td></tr> <tr><td>Enka Surmanis</td><td>T&amp;D</td><td>Power Delivery Consultants</td></tr> <tr><td>Prof. Stephen McArthur</td><td>AMPS</td><td>University of Strathclyde</td></tr> <tr><td>Jeff Joy</td><td>ICC</td><td>Seattle City Light</td></tr> <tr><td>Dr. Babu Chalamala</td><td>ESSB</td><td>Sandia National Laboratories</td></tr> <tr><td>Prof. Claudio Canizares</td><td>PSDP</td><td>University of Waterloo</td></tr> <tr><td>Bruce Forsyth</td><td>Transformer</td><td>Transformer Bruce Forsyth and Associates, PLLC, U.S.A.</td></tr> <tr><td>Linquan Bai</td><td>SBLC</td><td>LINC Charlotte</td></tr> </table>	Name	TCs	Affiliation	Prof. Kai Strunz	EDAPG	TU Berlin	Dr. Pengwei Du	PSOPE	The Electric Reliability Council of Texas, USA	Enka Surmanis	T&D	Power Delivery Consultants	Prof. Stephen McArthur	AMPS	University of Strathclyde	Jeff Joy	ICC	Seattle City Light	Dr. Babu Chalamala	ESSB	Sandia National Laboratories	Prof. Claudio Canizares	PSDP	University of Waterloo	Bruce Forsyth	Transformer	Transformer Bruce Forsyth and Associates, PLLC, U.S.A.	Linquan Bai	SBLC	LINC Charlotte	
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2) There are 4 TFs in operation now in EICC. They are:

- Task Force (TF) on Resilient and Secure Large-Scale Energy Internet Systems

Chair: Dr. Ioannis (Yannis) Zografopoulos, University of Massachusetts Boston, USA;

Co-Chair: Dr. Reza Arghandeh, Western Norway University of Applied Science, Norway

- Task Force on Research Development Annual Report of the Energy Internet

Officers: Dr. Feng GAO

- Task Force on Networked Microgrids in Energy Internet  
Chair: Zuyi Li, Illinois Institute of Technology, United States;
- Task Force on Cloud-Based Control and Co-Simulation of Multi-Party Resources  
Chair: Dr. Yan Xu, Nanyang Technological University, Singapore;  
Co-Chair: Dr. Graeme Burt, University of Strathclyde, UK.

**A good example: TF on Resilient and Secure Large-Scale Energy Internet Systems (TF RSEI)**

- Website: <https://cmte.ieee.org/pes-rsei/>



- **Liaisons**

Prof. Kai Strunz (ED&PG), Prof. S. McArthur(AMPS), Dr. Pengwei Du (PSOPE)

- 3) 2024 IEEE conf. on Energy Internet & Energy Systems Integration (**IEEE EI<sup>2</sup>**) was successfully held in Shenyang, China on Nov 29 – Dec 02.
  - The theme is “Towards Green and Intelligent Energy Internet”
  - 5 academicians report, 70+ forums, 5 poster presentation panels
  - 1,000+ industry experts and scholars attended
  - Special ceremony "Liaoning Energy Forum with 1,000 Doctors" was launched
  - IEEE PES Chair, Fellow of the Canadian Academy of Engineering, C.Y. Chung delivered opening speech



- 4) The launch of a new journal titled “*Energy Internet*” was launched in August 2024
- Journal website: <https://ietresearch.onlinelibrary.wiley.com/journal/29952166>
  - Prof. Hongbin Sun is the Editor in Chief
  - The scope of the journal includes: Technologies of Energy Section, Information Technologies for Energy Internet, Market and Policies for Energy Internet
  - There are over 30 submissions till now, including both original research and review papers.
- 5) In PES GM 2024, in EICC,
- a) 58 papers were received, 33 of them were accepted and presented at PES GM 2024.
  - b) 2 panels session and 1 poster session in EICC
    - i. Towards a Resilient Energy Internet in a Changing Climate
    - ii. Definitions, Challenges, and Enabling Techniques for Energy Internet Paradigm
- 6) In PES GM 2025, in EICC,
- a) We have received **53 submissions (including 47 conference papers, 6 Trans papers)** up to now.
  - b) Also, we will organize 2 2-hour panels in total, entitled
    - i. Towards Cross-Sector Energy System Resilience Under Climate Change
    - ii. AI-enabled Energy Internet and Energy System Integration
- 2. Benefits to Industry and PES Members from the Committee Work:**
- 1) Currently, there are 4 TFs in operation in EICC on different topics, for instance, Resilient and Secure Large-Scale Energy Internet Systems, State Estimation for Integrated Energy Systems, Cloud-Based Control, and Co-Simulation of Multi-Party Resources in Energy Internet.

Since they’ve been approved by the PES technical council, as well as our liaisons from other TCs, the TF members can expand their network with other scientists/engineers with similar interests, and improve the coordination between different entities on related topics.

2) Each year, the IEEE EI<sup>2</sup> conference is given a specific topic based on the latest trend in power engineering. In 2024, the topic has been “**Towards Green and Intelligent Energy Internet**”, which helped PES members rethink the development of our energy system, and also know more about how the green objective and intelligent behind the concept of energy internet, thus benefiting every PES member and attendee.

**3. Benefits to Volunteer Participants from the Committee Work:**

They could increase their visibility in this research area, and get connected with some senior-level experts.

**4. Recognition of Outstanding Performance:**

TF on Resilient and Secure Large-Scale Energy Internet Systems and their officers should be highly praised because their TF’s work was rather good for the past few years, and this year they realize a smooth transfer for the leadership within the TF too, from Dr. Charalambos Konstantinou, KAUST to Dr. Ioannis (Yannis) Zografopoulos, University of Massachusetts Boston.

- Website: <https://cmte.ieee.org/pes-rsei/meeting-minutes/>
- Scope with detailed coordination plan with TCs
- 50+ members currently
- Some webinars during 2024

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

We have confirmed 9 liaisons with PSOPE, SBLC, etc, listed below:

- |                           |              |  |
|---------------------------|--------------|--|
| • Prof. Kai Strunz        | ED&PG        | TU Berlin  |
| • Dr. Pengwei Du          | PSOPE        | Electric Reliability Council of Texas, Taylor, USA |
| • Eriks Surmanis          | T&D          | Power Delivery Consultants                         |
| • Prof. Stephen McArthur  | AMPS         | University of Strathclyde                          |
| • Dr. Babu Chalamala      | ESSB         | Sandia National Laboratories                       |
| • Prof. Claudio Canizares | PSDP         | University of Waterloo                             |
| • Jeff Joy                | ICC          | Seattle City Light                                 |
| • Bruce Forsyth           | Transformers | Bruce Forsyth and Associates, PLLC, USA            |
| • Linqun Bai              | SBLC         | UNC Charlotte                                      |

**6. New Technologies of Interest to the Committee:**

Pave the way towards low-carbon and carbon-neutral Integrated Energy Systems/Multi-energy carriers with Energy Internet technologies.

**7. Global Involvement & YP 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.

Please also provide information on the number of young professionals that are involved in your committee.

Total Number of committee members	Number of Young Professionals (under 35 years of age) – Including committee & subcommittee	Subcommittee officers from regions 8, 9 and 10	Subcommittee members from regions 8,9, and 10
120	16	3	97

**8. Problems and Concerns:**

- 1) We need more time slot at PES GM since the panel proposals are always more than the delivered time slot for EICC.
- 2) Without more on-site meetings, the working efficiency and enthusiasm of members from TFs and subcommittees could be reduced.
- 3) Some TFs will be closed soon, more TFs are needed.
- 4) Limited to technology and time, the frequency of website maintenance is usually low.

**9. Significant Plans for the Next Period:**

- 1) Try to encourage and improve the activities of TF in EICC.
- 2) The website construction on the concept of “Energy Internet” is not as helpful as planned, we still need better ideas to help IEEE PES members and engineers from all over the world to better understand the “Energy Internet” and contribute to this area.
- 3) Some paper on the definition of “Energy Internet” is already published, but some on IEEE Transactions are needed. This achievement will bring real further impetus and visibility to the “Energy Internet” movement.

**Submitted by:** EICC officers

**Date:** 2025.1.10