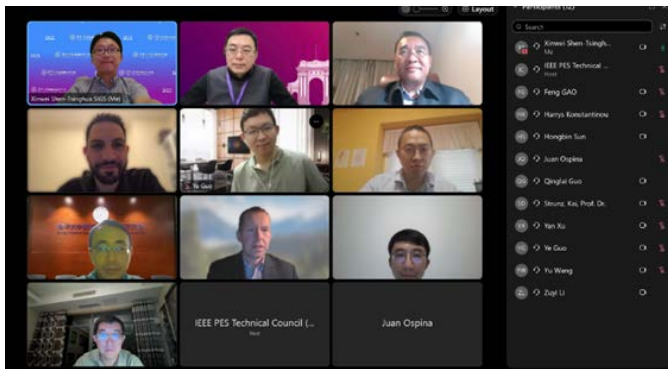


IEEE Power and Energy Society Entity Annual Report 2022

Entity: Energy Internet Coordinating Committee
Website: <https://cmte.ieee.org/pes-eicc/>
Chair: Hongbin Sun
Vice-Chair: Mohammad Shahidehpour
Secretary: Xuanyuan(Sharon) Wang
Technical Program Chair: Qinglai Guo
Webmaster: Xinwei Shen
Immediate Past Chair: None

1. Significant Accomplishments:

- 1) We held Annual Virtual Meetings in 2022, gathering 12 experts and scholars from different countries and regions.



**The 2022 Annual Meeting of EICC
(Web-Meeting)**

Sat. November 5 @ 22:05 – 23:35 (UCT+08:00) Beijing, China
Sat. November 5 @ 10:05 – 11:35 (UCT-04:00) Eastern Time, US

- 1. Welcome, Introductions, Sign-in**
 - There are 12 attendees.
 - Prof. Qinglai Guo chaired the meeting and gave a brief introduction to the EICC structure.
- 2. EICC Annual Report**
 - Prof. Xinwei Shen gave an annual report on EICC's activities in last year.
 - o The 5th IEEE EI² conference held in Taiyuan, China
 - The theme is "Energy Internet for Carbon Neutrality"
 - 1100+ paper submissions, 845 accepted
 - 41 technical sessions/panels, 70 paper sessions, and 5 poster sessions
 - o 3-panel sessions in the 2022 PES General Meeting
 - From Smart Grid to Energy Internet: Recent Advances in Security and Resilience (approved in other TC)
 - Advanced State Estimation for Energy System Integration: Modeling, Algorithms, and Applications
 - Coordinated control and co-simulation of power systems in Energy Internet

EICC Voting Portal (Proposals for GM Panels)

Please kindly vote on the proposals for General Meeting panels below.

You can either:

- (1) Download the entire proposal folder (available at <https://share.weiyun.com/Sa1E4Vmh> **OR** <https://we.tl/t-yUbl6KR8B3>) before continuing; or
- (2) Click on each hyperlink we provided alongside each question to view the proposals individually.

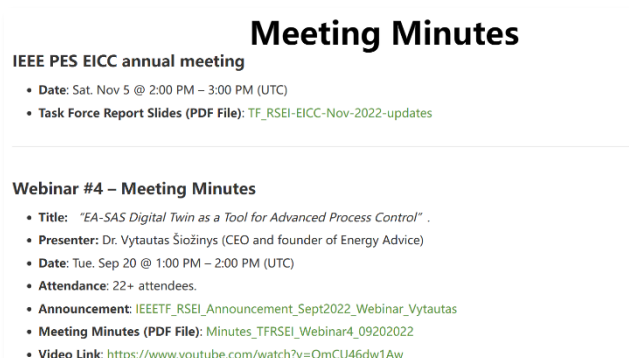
- Held on Nov. 5, 2022
- 12 attendees from EICC officers/liasons/steering committee members
 - ◆ We reported and discussed the EICC annual activities
 - ◆ Task Force Report and Comments are also included
 - ◆ Online discussions/voting about Panel Proposals in PES GM 2023
 - ◆ Future plan discussions

2) There are 5 TFs in operation now in EICC. They are:

- Task Force (TF) on Resilient and Secure Large-Scale Energy Internet Systems
Chair: Dr. Charalambos Konstantinou, KAUST, 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 State Estimation for Integrated Energy Systems
Officers: Dr. Junbo Zhao and Dr. Ye Guo
Coordination with Bulk Power System Operation Subcommittee
- Task Force on Networked Microgrids in Energy Internet
Chair: Zuyi Li, Illinois Institute of Technology, United States;
Co-chair: Yan Xu, Nanyang Technological University, Singapore.
- 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

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



- Coordination Plans

“C. Konstantinou is now the co-chair of IEEE TF on Cyber-Physical Interdependence for Power System Operation and Control under PES Bulk Power System Operation Subcommittee. He will coordinate with that TF and gather inputs from them to yield broader impacts on our new TF across the power community. We are also communicating with other TF and WGs. For example, we recently proposed a panel proposal in PES GM 2023 as part of our IEEE TF on Resilient and Secure Large-Scale Energy Internet Systems (EICC) efforts in coordination with WG on Cyber Security in Power Systems (CAMS/AMPS)”.

- Liaisons

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

3) 2022 IEEE conf. on Energy Internet & Energy Systems Integration (**IEEE EI²**) was successfully held in Chengdu, Sichuan, China on 11-13th, Nov.

- It was launched in 2017 and has been successfully held 6 times.
- Co-sponsored by IEEE PES, CSEE, Univ. of Elect. Sci. and Tech. of China, Chengdu Univ. of Tech., Tsinghua DEE/EIRI/SIGS, Taiyuan Univ. of Tech., Southwest Univ. Sci. and Tech.
- “Energy Internet and New-type Power System”
- 800+ paper submissions, 610 accepted.
- 60+ sub-meetings.
- 10000+ online/on-site attendees(1000+ registered).



4) Proceedings of the IEEE Special Section

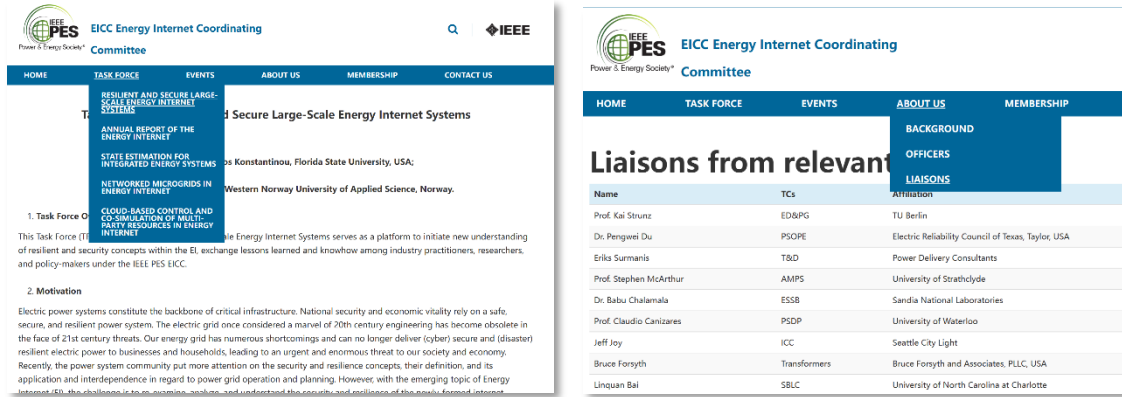
- Guest Editors: Hongbin Sun, Nikos D. Hatziargyriou
- Theme: Energy Internet
- Brief introduction of forthcoming 4 papers
 - Energy Circuit-based Integrated Energy Management System: Theory, Implementation, and Application (B. Chen, Q. Guo, G. Yin, B. Wang, Z. Pan, Y. Chen, W. Wu, and H. Sun)
 - Plug-and-Play Algorithms for the Efficient Coordination of Active Distribution Grids (I. Kouveliotis Lysikatos, D. Koukoulou, A. Dimeas, and N. Hatziargyriou)
 - On an Information and Control Architecture for Future Electric Energy Systems (L. Xie, T. Huang, P. R. Kumar, A. Thatte, and S. K. Mitter)
 - Application of Distributed Ledger Technology in Distribution Networks (Y. Zhou, A. Manea, W. Hua, J. Wu, W. Zhou, J. Yu, and S. Rahman)

5) In PES GM 2023, in EICC,

- a) We have received **28 conference paper submissions** up to now.

- b) Also, we organize 2 2-hour panels in total, entitled
 - i. “Digital Twins Applications in the Energy Internet Era”, expected attendance: 100
 - ii. “Data-Driven Approach for Multi-Party Resources in Energy Internet”, expected attendance: 40

6) We improved our website with the help of the PES technical council, with the TF’s information and respected liaisons from relevant TCs in it, illustrated as below:



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

1) Currently, there are 5 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 EI² conference is given a specific topic based on the latest trend in power engineering. In 2022, the topic has been “**Energy Internet and New-type Power System**”, which helped PES members rethink the development of our energy system, and also know more about the “New-type Power System” and “Carbon neutrality” globally, 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 is rather well last year.

They’ve held one annual meeting and 2 webinars last year according to their website, shown as below:

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

Meeting Minutes

IEEE PES EICC annual meeting

- Date: Sat. Nov 5 @ 2:00 PM – 3:00 PM (UTC)
- Task Force Report Slides (PDF File): [TF_RSEI-EICC-Nov-2022-updates](#)

Webinar #4 – Meeting Minutes

- Title: "EA-SAS Digital Twin as a Tool for Advanced Process Control"
- Presenter: Dr. Vytautas Šiožinytis (CEO and founder of Energy Advice)
- Date: Tue. Sep 20 @ 1:00 PM – 2:00 PM (UTC)
- Attendance: 22+ attendees.
- Announcement: [IEEEFP_RSEI_Announcement_Sept2022_Webinar_Vytautas](#)
- Meeting Minutes (PDF File): [Minutes_TFRSEI_Webinar4_09202022](#)
- Video Link: <https://www.youtube.com/watch?v=QmCU46dw1Aw>

Annual Meeting 2022 – Meeting Minutes

- Date: Thu. Sept. 1 @ 2:00 PM – 3:00 PM (UTC)
- Attendance: 10+ attendees.
- Meeting Minutes (PDF File): [MeetingMinutes_TFRSEI_AnnualMeeting_Sept2022](#)
- Presentation Slides: [TF_RSEI-EICC_Sep1-2022](#)

Webinar #3 – Meeting Minutes

- Title: "Holistic Performance Benchmarking in Power Systems with Distributed Control under Disruptive Cyberattacks"
- Presenter: Dr. Behnaz Papari (Clemson University)
- Date: Fri. May 27 @ 2:00 PM – 3:00 PM (UTC)
- Attendance: 12+ attendees.
- Announcement: [IEEEFP_RSEI_Announcement_May2022_Webinar](#)
- Meeting Minutes (PDF File): [Minutes_TFRSEI_Webinar3_05272022](#)
- Video Link: https://www.youtube.com/watch?v=m0_IZOYkOyg

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

We have confirmed 9 liaisons with PSOPE, SBLC, etc, listed as 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
- Linquan 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.

Related topics include but are not limited to:

- Energy Hub
- Multi-energy systems planning
- Multi-energy systems operation
- Multi-energy systems economy

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	Officers from regions 8,9 and 10	Subcommittee officers from regions 8, 9 and 10	Subcommittee members from regions 8,9, and 10
87	12	4	0	45

8. Problems and Concerns:

- 1) Without on-site meetings, the working efficiency and enthusiasm of members from TFs and subcommittees could be reduced.
- 2) Lack of experience on how to encourage and improve activities of TFs.
- 3) 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) Define the exact meaning and scope of “Energy Internet” at the level of Transactions or Journal papers, just like similar efforts had been made on the topics of resilience and stability. This achievement will bring real further impetus and visibility to the “Energy Internet” movement.

Submitted by: EICC officers

Date: 2022.12.26