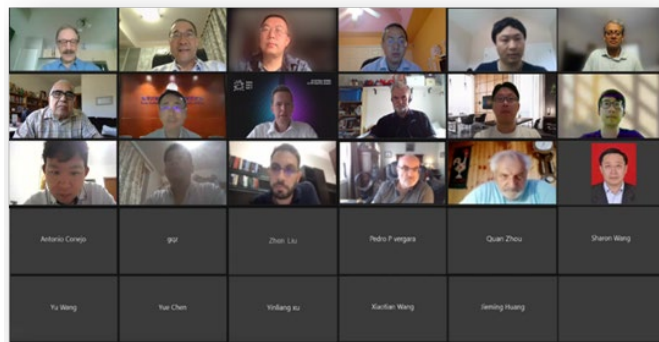


# IEEE Power and Energy Society Entity Annual Report 2021

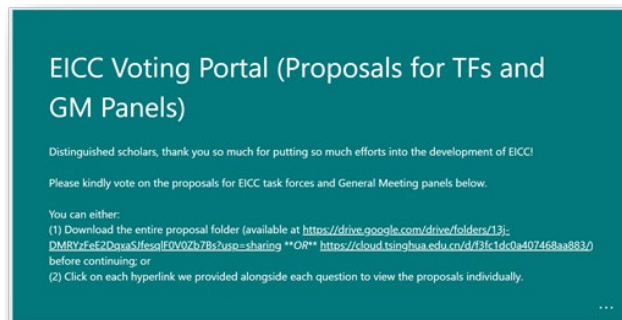
**Entity:** Energy Internet Coordinating Committee  
**Website:** <https://cmte.ieee.org/pes-eicc/>  
**Chair:** Hongbin Sun  
**Vice-Chair:** Mohammad Shahidehpour  
**Secretary:** Xuanyuan(Sharon) Wang  
**Technical Program Chair:** Qinglai Guo  
**Webmaster:** Xinwei Shen  
**Immediate Past Chair:**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

## 1. Significant Accomplishments:

- 1) We held Two Virtual Meetings in 2021, gathering 30+ experts and scholars from different countries and regions.



The 3 <sup>rd</sup> EICC Meeting in 2021 (Web-Meeting)	
Sun. November 7 @ 22:00 – 22:35 (UCT+08:00) Beijing, China	
Sun. November 7 @ 09:00 – 09:35 (UCT-05:00) Eastern Time, US	
<b>1. Results of online voting/Discussions on Revised TFs' scope and proposal</b> -An introduction to each revised TF scope and proposal was presented. Discussions were conducted by the attendees regarding how to enhance COORDINATION with other TC and minimize the overlap between TF in EICC and other existing TFs/WGs. -The documents are also put online for other steering members and liaisons of EICC (who could not attend the online meeting) to review, vote and make comments. -All 5 TFs in EICC are approved, some with comments to improve their work, listed as below:	
TF name	Comments
TF on Resilient and Secure Large-Scale Energy Internet Systems	Add liaison of PSPOE
TF on Research Development Annual Report of the Energy Internet	The working time of a TF is 3 years Haven't contacted liaisons yet, focus on contacting a few liaisons It's very challenging to form a real report. It needs to convene many different teams for meetings and summarize their results to form a report



- The first one: the annual meeting of EICC
  - Held on Aug. 29, 2021
  - 29 attendees from EICC officers/liaisons/steering committee members
    - ◆ We reported and discussed the EICC annual activities
    - ◆ Task Force Report and Comments are also included
    - ◆ Future plan discussions
- The second one: meeting & online voting of EICC
  - Held on Nov. 7, 2021

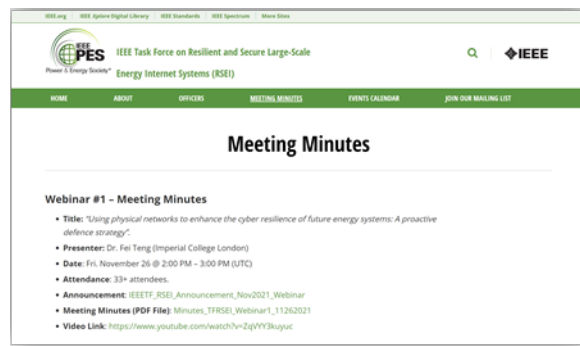
- ◆ Online discussions / voting till the end of Nov. , about
- ◆ Revised TFs' scope and proposal
- ◆ Panel Proposals in PES GM 2022

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 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 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)”.*

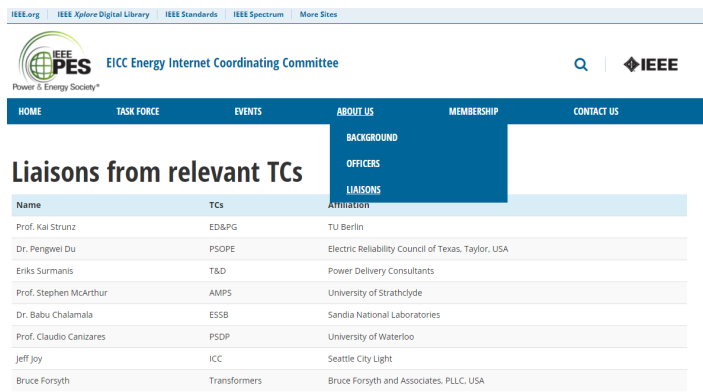
### - Liaisons

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

- 3) 2021 IEEE conf. on Energy Internet & Energy Systems Integration (**IEEE EI<sup>2</sup>**) was successfully held in Taiyuan, Shanxi, China on 22-24<sup>th</sup>, Oct.
- It was launched in 2017 and has been successfully held 5 times.
  - Co-sponsored by IEEE PES, CSEE, Tsinghua DEE/EIRI/SIGS, Taiyuan Univ. of Tech.
  - “Energy Internet for Carbon Neutrality”
  - 1100+ paper submissions, 845 accepted.
  - 41 technical sessions/panels, 70 paper sessions, 5 poster sessions.
  - 10000+ online/on-site attendees(1000+ registered).



- 4) In PES GM 2022, in EICC,
- a) We received **23 conference papers submission** in total.
  - b) Also, we organize 2 2-hour panels in total, entitled
    - i. “Coordinated control and co-simulation of power systems in Energy Internet”, expected attendance: 100
    - ii. “Advanced State Estimation for Energy System Integration: Modeling, Algorithms and Applications”, expected attendance: 40
- 5) We improved our website with the help from 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, improve the coordination between different entities on related topics.

2) Each year, IEEE EI<sup>2</sup> conference is given a specific topic based on latest trend in power engineering. In 2021, the topic has been “**Energy Internet for Carbon Neutrality**”, which helped PES members rethink the development of our energy system, and also know more about the “peaking Carbon emissions” and “Net zero plan” 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, 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 good last year.

They've held 1 Kickoff meeting and 2 webinars last year according to their website, shown as below:

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

### Meeting Minutes

#### Webinar #2 – Meeting Minutes

- **Title:** “Analysis and Detection of IoT-Based Load-Altering Attacks Against Power Grids”.
- **Presenter:** Dr. Subhash Lakshminarayana (University of Warwick)
- **Date:** Wed, March 2 @ 3:00 PM – 4:00 PM (UTC)
- **Attendance:** 40+ attendees.
- **Announcement:** IEEEETF\_RSEI\_Announcement\_March2022\_Webinar
- **Meeting Minutes (PDF File):** Minutes\_TFRSEI\_Webinar2\_03022022
- **Slides:** Subhash\_TF\_RSEI

#### Webinar #1 – Meeting Minutes

- **Title:** “Using physical networks to enhance the cyber resilience of future energy systems: A proactive defence strategy”.
- **Presenter:** Dr. Fei Teng (Imperial College London)
- **Date:** Fri, November 26 @ 2:00 PM – 3:00 PM (UTC)
- **Attendance:** 33+ attendees.
- **Announcement:** IEEEETF\_RSEI\_Announcement\_Nov2021\_Webinar
- **Meeting Minutes (PDF File):** Minutes\_TFRSEI\_Webinar1\_11262021
- **Video Link:** <https://www.youtube.com/watch?v=ZqVY3kuyuc>





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

We have confirmed 8 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

They all attended the 2nd EICC annual meeting to discuss about coordination between the TCs and EICC.

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

Pave the way towards low-carbon and carbon-neutral Integrated Energy System/Multi energy carrier.

Related topics include but not limited to:

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

## 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	Officers from regions 8,9 and 10	Subcommittee officers from regions 8, 9 and 10	Subcommittee members from regions 8,9, and 10
62	4	0	40

## 8. 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 that 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.

Submitted by: EICC officers

Date: 2022.03.10