

# IEEE Power and Energy Society Entity Annual Report 2020

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

## 1. Significant Accomplishments:

- 1) We held the first EICC online meeting, gathering 66 experts and scholars from 14 countries and regions.



- Prof. Hongbin Sun expressed the proposal in forming Task Forces (TFs), 2021 PESGM Super Session, 2021 PESGM Panel Session and Sub-committees within the EICC. Many experts joined the discussion of the proposal.
- All experts who joined the discussion agreed with the importance of building TFs.
- Specially for the first TF, a clear and official definition, framework and vision of EI is of great importance (Prof. Mohammad. Shahidehpour, Prof. Jovia Milannovic Prof. Sadegh Vaez-Zadeh, Prof. Jianzhong Wu).

- 2) After the meeting, there are 7 proposals for 6 TFs and 1 Sub-committee. They are:
- Task Force (TF) on Resilient and Secure Large-Scale Energy Internet Systems  
 Chair: Dr. Charalambos Konstantinou, Florida State University, 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 in Energy Internet

Chair: Dr. Yan Xu, Nanyang Technological University, Singapore;

Co-Chair: Dr. Graeme Burt, University of Strathclyde, UK.

- Task Force on Definition, Framework and Vision of Energy Internet (DFVEI)

Chairs: Prof. Hongbin Sun and Prof. Mohammed Shahidehpour

- Multi-Energy Infrastructure Sub-Committee

Proposers: Prof Hongbin Sun, Tsinghua University, China

Prof. Mohammad Shahidehpour, Illinois Institute of Technology,  
USA

Prof Jianzhong Wu, Cardiff University, UK, Head of School of  
Engineering, Co-Director of the UK Energy Research Center

- 3) The 4<sup>th</sup> IEEE conference on Energy Internet and Energy System Integration was held on 28-30<sup>th</sup>, Oct, 2020, in Wuhan, China. There are around **1000 attendees** in this conference, which might be one of the few on-site conferences in IEEE PES this year.



In this conference, we also invited lots of members of IEEE PELS to participate, which showed good collaboration spirit between PES and other IEEE society.

In total, there were **400 talks** from researchers and experts from colleges and industry, given either on-site or online, which we believe truly enhanced the connections between all the attendees within the scope of IEEE PES.

- 4) In PES GM 2020, in EICC,
  - a) We received **45 conference papers submission** in total, which is a good result for a brand-new CC.
  - b) Also, we organize three 2-hour panels in total, entitled
    - i. “Cyber-Physical Systems in Energy Internet”, expected attendance: 80
    - ii. “Energy Services Enabled by Energy Internet”, expected attendance: 50
    - iii. “Modeling and Optimization for Integrated Energy System and Multi Energy Networks”, cooperating with PSOPE, expected attendance: 40
- 5) We established our website with the help from PES technical council, which follows the template of other PES TCs and CCs, illustrated as below:



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

- 1) Currently there are several TFs 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.

Once approved by the PES technical council, the TF members can expand their network with other scientists/engineers with similar interests 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 2020, the topic has been “connecting the grids towards a low-carbon high-efficiency energy system”, which helped PES members rethink the development of our energy system. Moreover, this topic is strongly related to the latest goal committed by Chinese government to peak carbon emissions in 2030 and become carbon-neutral in 2060, which is also becoming a global concern in every other country, thus benefiting every PES member 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:**

None. Because EICC has just been established last year.

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

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

- Prof. Kai Strunz, Liaison from ED&PG
- Dr. Pengwei Du, Liaison from PSOPE
- Prof. Gary Chang, Liaison from T&D
- Prof Le Xie, Liaison from AMPS
- Prof Qixin Chen, Liaison from SBLC

They all attended the first EICC online meeting to discuss about coordination between the TCs and EICC.

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

Integrated Energy System/Multi energy carrier. The topics include:

- Energy Router
- 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 59	Officers from regions 8,9 and 10 4	Subcommittee officers from regions 8, 9 and 10 0	Subcommittee members from regions 8,9, and 10 29
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**8. Problems and Concerns:**

- 1) The response from the PES technical council on TFs and subcommittee is not in time.
- 2) Without on-site meeting, the working efficiency and enthusiasm of members from WGs, TFs and subcommittee could be reduced.

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

- 1) We'd like our proposals for new WG, TF, and first subcommittee be approved and start their normal activities.
- 2) Continue our website construction, to help PES members and engineers from all over the world to better understand the "Energy Internet" and contribute to this area.
- 3) A white book report about the definition, framework and visions about EI should be started, conducted and published soon.

Submitted by: \_\_\_

Date: