

## IEEE Power and Energy Society Entity Annual Report

2022

**Entity:** Power and Energy Education Committee (PEEC)

**Website:** <https://site.ieee.org/pes-peec/>

**Chair:** Sukumar Kamalasadana

**Vice-Chair:** Aaron St. Leger

**Secretary:** David Gao

**Immediate Past Chair:** Anurag Srivastava

### 1. Significant Accomplishments:

Many of PEEC activities are generally conducted in person, in conjunction with, conferences (IEEE PES General Meeting (GM), IEEE PES Transmission and Distribution Conference and Exhibition (T&D), and the North American Power Symposium (NAPS)). 2022 is the first year, post COVID 19 pandemic, that all activities were able to be conducted in person. However, a virtual attendance of many PEEC meetings continues to be provided to help bolster volunteer participation in PEEC activities. PEEC intends to sustain this so long as PEEC members find value in a virtual attendance option. Some specific notable PEEC activities for 2022:

- a. The 2022 IEEE/PES Transmission and Distribution Conference and Exposition was held at the Ernest N. Morial Convention Center, New Orleans, April 25-28, 2022. A comprehensive student program was organized in tandem by the student activities subcommittee and the local organizing committee (LOC). Due to the COVID situation and conference timing, student programs for both T&D and Innovative Smart Grid Technologies (ISGT) conferenced were combined. Highlights of the program include the student poster session and housing support program. The poster session was conducted for both T&D and ISGT student participants. There were a total 31 posters at the graduate level, and one poster at the undergraduate level. Certificates were sent via email, and plaques mailed out to winners. The housing program provided no-cost housing for 41 students (4 nights each). A high school power challenge was conducted where students from local high schools participated and demonstrated their science projects. The topic was Power in Discovery and the students focused on various aspects of wind power including Windmill Design, Siting and Offshore Wind Farm, and Wind Blade Design. Students presented their projects to the judges for the opportunity to win prizes for themselves and their classrooms.



High School Competition at 2022 IEEE PES T&D Conference and Exposition

- b. The IEEE/PES General Meeting (GM) was held at the Sheraton Downtown Denver Hotel, Denver, July 17-21, 2022. A variety of PEEC activities occurred in conjunction with the GM.
- PEEC sponsored and provide eight panel sessions on a variety of power and energy education topics at the GM. All were very well attended and spurred great discussion and dialog among conference attendees.
  - The student program for the GM (poster contest and Student/Industry/Faculty (SIF) Luncheon and panel) were successfully conducted from July 17-21, 2022. The student poster session was conducted with 137 students and 100+ judges. Winners were announced at the SIF panel on 7/20/2022. Certificates were sent via email, and plaques mailed out to winners. The student housing support program provided free 4-night hotel stay for 142 students.



SIF Luncheon and Student Power Winners at the 2022 IEEE PES GM

- The Student/Industry/Faculty event was held on 7/20/22 from 12:00-2:00 PM MT. Dr. Alex Flueck from Illinois Institute of Technology was the moderator. The panelist were Alex Dove – Substation Field Engineer, Xcel Energy; Yuanrui Sang – Assistant Professor In Electrical & Computer Engineering, University of Texas at El Paso; Adarsh Nagarajan – Group Manager, U.S. National Renewable Energy Laboratory (NREL); Josh Moyers – Electrical Engineer, Western Area Power Administration (WAPA). The lunch session also included tables hosted by companies to provide advice to students about interviewing and job opportunities. These companies were: Xcel Energy, Burns and McDonnell, NYISO, Lawrence Livermore National Laboratory, Eaton, CLP Engineering, Mitsubishi Electric, ComEd, and Appian Way Energy Partners.
  - Seven tutorials were provided during the 2022 GM on a variety of technical topics including HVDC technology, probabilistic energy forecasting, and more. Panel topics can be seen [here](#).
  - Five PEEC Subcommittee meetings, the PEEC AdCom meeting, and the PEEC main committee meeting were held at the 2022 PES GM.
- c. The 54th North American Power Symposium (NAPS) was hosted by the University of Utah in Salt Lake City, Utah, from October 9-11, 2022. The 54th North American Power Symposium (NAPS) was hosted by the University of Utah in Salt Lake City, Utah, from October 9-11, 2022. Marking the 54th edition, the symposium brought together 136 students, 35 faculty members, 6 national laboratory scientists, 1 government authority, and 14 industry representatives. A total of 145 papers, organized into 28 parallel sessions, were accepted from 170 submissions (acceptance rate of about 85%). All papers presented by students were evaluated and considered for best paper awards by track chairs and faculty attendees. Graduate papers and

undergraduate papers were separately considered for best paper awards. The top three graduate student papers were provided awards (first, second and third place); the top two undergraduate student papers were provided awards (first and second place). A total of 5 best paper awards with certificates were presented to the respective student authors. The NAPS 2022 student program committee processed applications and provided no-cost housing for 100 students.



Poster session and banquet dinner at the Natural History Museum of Utah

- d. Task Force on “Innovative Teaching Methods for Modern Power and Energy Systems” continues work on a PES Technical report, wrote multiple papers, conducted a panel session, and garnered 60-70 respondents to a questionnaire on assessment and teaching methods.
- e. The University Education Subcommittee continues to expand the online portal for courses and resources than can provide educational material to the PES community. A formal working group was formed to continue to support this effort and expand the products provided to the PES community at no cost. The repository of content can be seen [here](#).
- f. The PEEC Survey, traditionally conducted every two years, is a valuable resource to PES members pertaining to status and evolution of power engineering curricula. Due to COVID the Survey was delayed. However, a working group has made significant progress on crafting the survey questions and have funding support from PES to conduct these surveys in the coming year. For the first time ever, there will be an international version of the survey in addition to the traditional North American survey.

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

PEEC provides a variety of benefits:

- Engaged in providing in person tutorials at conferences, and no-cost online resources for undergraduate and graduation education in power and energy systems.
- Creates and improves relationships between all segments of electric power and energy industry and all elements of the engineering education community.
- Formulates recommended PES policy relative to all matters involving engineering and technology curricula accreditation.
- Serves as the primary source of PES recommenders for service in various activities of ABET.
- Actively engages PES student members and provides a variety of student activities at the PES General Meeting, North American Power Symposium, and PES Transmission and Distribution Conference and Exposition.
- PEEC Survey conducted every two years.
- PES High School Initiative: sponsorship and mentorship of high school students to participate in a Power & Energy design project/competition. They attend the T&D conference and present their results. A successful pilot in 2018, cancelled in 2020 due to COVID pandemic, and conducted again in 2022.

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

PEEC provides a variety of benefits:

- Venue to stay involved in, and up to date on advancements, in Power and Energy Education.
- Volunteer and leadership opportunities.
- Professional networking and professional development through PEEC activities.

## **4. Recognition of Outstanding Performance:**

- Chanan Singh was awarded the IEEE PES Lifetime Achievement Award for sustained contribution to the education, research, and industrial adoption of reliability theory and practice in large power systems.
- Joe Hong Chow was awarded the IEEE PES Outstanding Power Engineering Educator Award for contributions to mentorship and education on power system stability and control.



- Three PEEC members become IEEE fellows: Anurag Srivastava for contributions to electric grid resiliency, Le Xie for contributions to economic and secure operations of power systems and big data analytics, and Lingling Fan for contributions to stability analysis and control of inverter-based resources.
- Two outgoing PEEC Subcommittee Chairs were recognized for their long-term leadership of subcommittees: Sara Eftekharnjad (Career Promotion and Workforce Development) and Christine Chen (University Education).

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

The University Education Subcommittee continued to work on an online portal for courses and resources that can provide educational material to the PES community. PEEC is also working on coordinating and collaborating with PES education initiatives being directed by the VP of Education, Babak Enayati.

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

PEEC is interested in:

- Technology that supports, or drives innovation in, pedagogy
- Innovations in laboratory equipment and structured experimentation for power engineering education

**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). PEEC will work to obtain this data and report it in the near future.

|                                          |                                                         |                                                                       |                                                                      |
|------------------------------------------|---------------------------------------------------------|-----------------------------------------------------------------------|----------------------------------------------------------------------|
| Total Number of committee members<br>108 | Officers from regions 8,9 and 10<br>(Not Yet Collected) | Subcommittee officers from regions 8, 9 and 10<br>(Not Yet Collected) | Subcommittee members from regions 8,9, and 10<br>(Not Yet Collected) |
|------------------------------------------|---------------------------------------------------------|-----------------------------------------------------------------------|----------------------------------------------------------------------|

**8. Problems and Concerns:**

PEEC has previously voiced concern regarding coordination between PEEC and IEEE PES Governing Board on Power and Energy Education activities. Specifically, PEEC would like to be involved when Power & Energy Education Activities are driven at the Governing Board level and have some input on the selection of PES VP of Education. The present VP of education has been very receptive to the desire to have PEEC more involved and PEEC will continue to work with the VP of Education to improve this



synergy. Additionally, operations and budgeting at the Governing Board level have recently been changing without communication to PEEC, which has caused several issues in 2022. PEEC would like to have pertinent PES Governing Board members attend PEEC meetings and keep PEEC informed so the committee operate more efficiently.

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

PEEC has a few focus areas moving forward:

- Continue to improve PEEC involvement and coordination with VP Education and PES Governing Board. In particular, PEEC would like to continue to expand collaboration in PES University expand other educational activities.
- Continue to expand provided educational materials: <https://sites.google.com/view/power-course-repository/home>
- Better collaboration and increased PEEC participation from industry and Regions 8, 9, and 10.
- Led by the Awards Subcommittee, an "Outstanding Doctoral Dissertation in IEEE PES" award and panel have been created to recognize the best emerging academic work that falls under the scope and enhances the mission of the Power and Energy Society
- Led by the University Education Subcommittee, the traditional PEEC Survey will be conducted and exploration into expanding the Survey to additional regions will be performed.
- Interact closely with PES University on Pre-undergraduate education activities.

**Prepared and submitted by:**

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**Date: 12/30/2022**