The main goals of the TEES Smart Grid Center (SGC) were: 1) Developing strategic large-scale research projects; 2) Pursuing research projects funded by the SGC partially based on its membership with companies; 3) Giving online short courses; and 4) Hosting SGC webinars.

Membership of Smart Grid Center

The following companies have SGC memberships:
- CenterPoint Energy, Full Member
- Entergy, Associate Member
- ERCOT, Full Member
- Texas Co-Op Power (United Cooperative Services, Bluebonnet EC, Farmer’s EC, Grayson-Collin EC, Mid-South Synergy), Full Member.

Research Projects Funded by the Center
- “Predictive Outage and Asset Management Decision-making Tool Assisting Distribution Operators”, PI: M. Kezunovic (ECE TAMU)
- “Application of Texas A&M Electric Grid Control Center testbed”, PI: T. Overbye, Co-PIs: K. Davis and K. Shetye (ECE TAMU)
- “Distributed Generation and Its Impact on Market and Protection”, PI: L. Xie, Co-PIs: D. Kalathil, M. Begovic (ECE TAMU)
- “Impact of Customer Owned Battery Storage on the Grid”, PIs: Miroslav Begovic and Chanan Singh (ECE TAMU)

Strategic Project Focus Areas
- Microgrids; Cyber-physical security with emphasis on interactions between different critical infrastructures; Future wholesale ancillary service products and retail market participation strategies; Synthetic grids; Impact of geomagnetic disturbances on power grid; Big data including weather impact analyses integrated into GIS framework; Synchronized sampling technology for Transmission & Distribution applications; Flexible loads including on-site energy storage and distributed generation at different scales; Renewable forecasting with focus on solar and wind generation.
New Large Research Projects


“Multi-layer Cybersecurity and Situational Awareness to Enhance Resiliency in Qatar’s Power Grids”, Lead PI: H. Abu-Rub (EE TAMU-Qatar), Co-PIs N. Reddy (ECE TAMU) et al., Partners include Qatar University, TAMU, TAMU-Qatar, Kansas State University, University of Illinois at Chicago, Kahramaa, Hamad Bin Khifia University. QNRF awarded $3.2M to the project for 4 years starting in Jan. 2021.


Advisory Board Meetings

- The 17th AB meeting was held via zoom on Nov. 9, 2020
- The 18th AB meeting was also held via zoom on Apr. 5, 2021.

New Advisory Board Member

Mr. Valentine Emesih, Division Vice President, CenterPoint Energy, joined the Advisory Board and started his 3-year term on Jan. 2021

The list of all current Board Members can be found at https://smartgridcenter.tamu.edu/index.php/advisory-board

Short Courses

The short courses were held via zoom

- “Machine Learning and Deep Learning for Smart Grids Big Data, Short Course”, Course instructors: Dabeeruddin Syed; Ameema Zainab (PhD candidates, ECE, TAMU), Free for SGC-Q partners, Apr. 4, 2021.

Testbeds

- Large-Scale Electric System Research Center (PI: T. Overbye):
  - supporting research in electric system planning, operations and performance;
  - serving as an educational platform to support university courses and industry short courses;
  - providing a comprehensive platform for the industry to perform commissioned studies and analyses.

Resilient Energy Systems Lab (RESLab, PI: K. Davis) enabling Cyber-Physical Resilient Energy Systems (CYPRES) for modeling, developing use cases and with closed loop of monitoring analysing, controlling, and evaluating. CYPRES was created to act as a next generation cyber-physical EMS/SCADA. More is posted at http://cypres.engr.tamu.edu

Webinars Held via Zoom


Publications

- Research results were published in 17 peer-reviewed papers, 1 patent, and 13 conference publications by SGC faculty collaborators (as first authors) at SGC.
- SGC-Qatar faculty, staff, and students published (as first authors) 35 peer-reviewed papers, and 31 conference publications.

Selected publications can be downloaded at the Center’s websites.

SGC Websites

Expertise of collaborating faculty members, news on activities, selected publications and more can be viewed at http://smartgridcenter.tamu.edu.

For the SGC-Q, news and information on people, projects and publications are posted at http://www.sgc-q.com.