

2022

**Entity: Renewable System Integration Coordination Committee**

**Chair: YC Zhang**

**Co-Vice-Chair: Miaolei Shao/Aidan Tuohy**

**Technical Committee Program Chair: Aidan Tuohy**

**Liaison Coordinator: Sudipta Dutta**

**Secretary and Award Rep: Junbo Zhao**

**Webmaster: Rui Yang**

The role of RSICC is to serve as a focal point within the Power and Energy Society (PES) for the identification of challenges associated with the integration of renewable energy resources, related energy carriers (storage, fuels, heat) and related electrification applications (transportation, buildings, industry.)

### **1. Significant Accomplishments:**

In 2022, RSICC has focused on PES General Meeting, the RSICC has sponsored two panel session (National Transmission Planning, Grid Forming inverters) also contributed to other panels such as Resource adequacy, Impact of climate change.

Governments worldwide has put together programs to invest in renewable energy deployments, but transmission expansion remains one of the difficult issues that constraint the integrating of renewable generation. In the National Transmission Planning panel, we invited utility practitioners, policy makers, builders, technology providers and government program managers together to discuss innovative ways to expedite the transmission planning process in coordination with siting and permitting, to enhance transmission efficiency and reliability utilizing new technology, and to develop renewable systems features that supports non-wire alternatives of the transmission capacity. Under the resource and transmission adequacy, we have covered the topics of deeper insights into resource adequacy shortfalls, recent work from the IEEE Resource Adequacy Working Group, valuing energy storage for resource and transmission adequacy, modeling uncertainty and gas-electric interactions in adequacy studies, HVDC development for transmission and resource adequacy, and considering extreme events, correlated outages, and climate change in resource adequacy. This year we highlighted that extreme weather events are affecting every aspect of the grid – from generation, transmission, distribution, to demand. Grids is facing extreme weather events that cause operational conditions that exceed the initial system design limitations, which leads to an ever-increasing risk of catastrophic failure. In one of the supersession, panelists made up of leaders from system operators, utilities, consultants, and researchers shared their experience on how to operate and prepare the grid under extreme weather events. We also make the connections between industry and academic at the Grid Edge topics, including distributed energy resources and energy storage are paving the way to grid modernization, flexibility from distributed resources, hydrogen and smart energy storage in data centers, understanding the behind-the-meter resources, grid edge AC OPF applications, grid modernization and DER.

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

In 2022, RSICC has played a major role in coordinating IEEE standards in inverter-based resources integration, include IEEE P2800/P2800.1, IEEE P2882, IEEE 2030.11, IEEE 1547. All leaders and participators are invited to present in RSICC's annual meeting. Their updates and the documentation have given industry direct comparison over different standards and their scopes. It also provides a venue for industry and IEEE committees to identify and mitigate the gaps within all the existing renewable integration standards.

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

As a coordinating committee, RSICC does not write standards or conduct technical work. Rather, it coordinates wind and solar activities among PES Technical Committees. RSICC is a resource for members who want to get more involved with wind and solar. RSICC can help direct members who are seeking deeper involvement in specific technical areas. The following participant has presented their committee work at the RSICC meeting and the presentations are attached.

- PSOPE, Xin Fang
- AMPS, Stephen Miller
- EDPG, Wind and Solar Plant Interconnection and Design SC (incl. 2800), Ben York
- Transportation Electrification Committee, Sudipta Dutta on behalf of Bruno Lequesne and Veronica Rabl
- PSRC, Aboutaleb Haddadi
- Smart Buildings, Loads and Customer Systems, Ron Melton
- IEEE Smart Grid Technical Activities Committee, Satish Saini
- PSOPE Econ SC, Erik Ela

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

RSICC established and extended list of liaisons from other IEEE committees and external organizations who works on renewable systems integration. RSICC has established liaisons with the following organization or groups to bring awareness of their efforts in renewable systems integration to IEEE PES for other committees to digest and utilize

- IEEE Transportation Electrification Community (TEC)
- UNIFI consortium
- G-PST
- ESIG

RSICC is continuing the identification and tracking of the activities of our liaison groups, both inside and outside of IEEE.

### **5. New Technologies of Interest to the Committee:**

The RSICC is focusing on coordinating road, system level issues related to the grid of the future and technologies such as storage, buildings, and other systems that are coupled with renewable integration. We are focusing on coordinate activities related to all forms of renewable energy as we work towards a clean power grid. We're also planning on staying very involved and helping to coordinate discussions related to storage and hybrid plants which could be considered "firmed" renewable resources. We're interested in helping to broadly coordinate as much as we can to help all involved parties and technologies without encroaching on any technical committee's scope.

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

We expect to establish enhanced liaison relationships with focused group of relevant organizations, and we plan to issue first annual whitepaper in collaboration with CIGRE to summarize and share relevant renewable system integration efforts.

### **7. Problems and Concerns:**



At this time, there are no problems or concerns to mention.

**Submitted by: Yingchen (YC) Zhang, Chair, RSICC**

**Date: 1/29/2023**