IEEE Power and Energy Society
Entity Annual Report

CY2017

Entity: IEEE PES Energy Storage and Stationary Battery Committee

Chair: Chris Searles, BAE Batteries USA
Vice-Chair: Curtis Ashton, Century Link
Secretary: Babu Chalamala, Sandia National Laboratories

1. Significant Accomplishments:

The ESSB Committee believes that this was an extraordinary year in our development and progress. Attendance at our General Meetings increased by an average of 50% over 2016. Significant accomplishments (some of which will be explained in sections below) include:

a. Participating in 5 external energy storage conferences where the case was made to encourage membership in IEEE and specifically the ESSB Committee. This resulted in at least a half dozen new recruits that are now applying for membership in the Committee itself.
b. Contributed to an Energy Storage white paper now in final draft form sponsored by the IEEE PES Smart Grid Initiative. Six members from the Committee provided input to the draft document.
c. In concert with SCC 21, participated in a major energy storage web seminar again sponsored by the IEEE PES Smart Grid Initiative. The ESSB portion was lauded as very informative. Over 1000 people actually registered for the webinar and the actual attendance was over 400. The data has been posted on the Smart Grid Initiative Resource Materials website.
d. Two new Working Groups were established: [1] an upgraded ESSB Committee level Safety Codes and Standards WG; and [2] a WG to develop a Recommended Practice for Energy Storage for Engine Starting Batteries. A PAR was opened on September 28, 2017 and has begun work on the standard. The ESSB Safety Codes and Standards planned a major technical session which involved bringing in a special consultant engaged for the DOE who publishes a monthly roadmap of safety standards development by a multitude of agencies, including IEEE.
e. A study group was formed to pursue establishment of a Working Group to develop a standard on flow batteries, a potentially exciting battery that is beginning to be used in grid-scale energy storage applications.
f. Developed and presented a 4-hour tutorial on Energy Storage, attended by 90+ persons in Chattanooga in June 2017. TVA was engaged to serve as a local host, and several engineers from TVA attended as well as utilities from the TVA distribution territory both the ESSB Committee meeting and the tutorial.
g. Engaged and provided leadership in establishing an Energy Storage Task Force between the SCC 21 and PES/ESSB Committees. The Chair of the ESSB Committee serves as a Co-Chair of the ESTF, and was successful in expanding the original task force to include both the Vice-Chair and Secretary of this group. Along with accelerating a liaison effort with SCC 21, we were able to recommend that ESSB be a co-sponsor of a new 1547 guide that will examine energy storage as it applies to interconnectivity to the grid.
h. Began discussions with the Chair of SCC 21 and their top-level Committee to transfer the PV lead-acid battery standards to the ESSB Committee. Working with the SA Standards Association representative to both groups, ESSB voted to accept those standards when SCC 21 works through the issues of transfer. In the meantime, the ESSB members of the ESTF stressed the importance of

those standards that were set to expire at the end of 2018, and a fast-track process has brought 5 of those standards into the myProject system for ballot.

The PARS out for ballot are:

i. IEEE P1013 – Recommended Practice for Sizing Lead-Acid Batteries for Standalone Photovoltaic Systems
ii. IEEE P1562 – Guide for Array and Battery Sizing in Standalone Photovoltaic Systems
iii. IEEE P937 – Recommended Practice for Installation and Maintenance of Lead-Acid Batteries for Photovoltaic (PV) Systems
iv. IEEE P1561 – Guide for Optimizing Performance and Life of Lead-Acid Batteries in Remote Hybrid Systems
v. IEEE P1661 – Guide for Test and Evaluation of Lead-Acid Batteries Used in Photovoltaic (PV) Hybrid Power Systems
Note: P1013 and P1562 are open for ballot right now. The other 3 to be open for ballot in early 2018.

i. Accepted 2 Fellow members into membership, making this a historic first for the Committee. It now has two Fellow members, and one has agreed to serve as Fellow Coordinator for the ESSB Committee.

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

Members, guests as well as tutorial and webinar attendees gained a greater understanding of the changing and evolutionary role of the grid, while continuing to expand the knowledge of engineers, technicians, and research & development subject matter experts in the continuing growth of energy storage. A balance between the new energy storage technologies and the traditional stationary battery systems was achieved. A greater awareness of work both commercially and in R&D efforts from universities and the National Labs is bringing about a healthy interchange of ideas, project collaboration and development.

3. Benefits to Volunteer Participants from the Committee Work:

The ESSB Committee made a specific effort to reach out to the local chapter in its spring meeting held in Chattanooga TN in June 2017. The success of that outreach (approximately a dozen or more local members of the regional PES attended the tutorial) has become a "must-invite" action for all future meetings.

The expanded role of the ESSB has allowed for many new members to become engaged as leaders of various working groups and Officer positions within those WG's. Specifically, we have engaged three members of the national labs to join ESSB and serve in key officer roles. Two newer members of the Committee have agreed to assume Chair and Vice-Chair roles in three of the 17 active working groups currently working on standards.

4. Recognition of Outstanding Performance:

For the first time in it's history (to my knowledge), the ESSB (formerly the Stationary Battery Committee) put forth nominations for Society Awards other than giving a plaque to the outgoing Chair upon succession. While we can't control how the Award selection is made, we think we nominated (and recognized them to the Committee) as worthy candidates as follows:

a. The IEEE PES Wanda Reder Pioneer in Power Award – Lesly Varga
b. The IEEE PES Meritorious Service Award – James McDowall
c. Technical Council Distinguished Service Award – Bill Cantor
d. Recognition Award for Outstanding Standard or Guide – ESSB 1881 Working Group
e. 3 new Senior Members

Note: qualifications and accomplishments are outlined in the award submissions, so not repeated here.

5. **Coordination with Other Entities (PES Committees, CIGRE, standards, etc.):**
The ESSB Committee has made a significant effort to build bridges with other groups who may be engaged (peripherally or directly) in energy storage and/or stationary batteries. This includes the major efforts with SCC 21 and the IEEE PES Smart Grid Initiative described above. But in addition, have reached out preliminarily to the Substations Committee, providing comments on stationary batteries incorporated in one of their standards as well as the IAS Society. Much more effort will be devoted to this in the future.

Our Vice-Chair did make a trip to China to represent ESSB efforts in concert with PELS, as did our Secretary who made a special trip to Denmark, accompanying the President of PES, for a unique initiative to share PES/SEL interests in Scandinavia, presenting ESS objectives and interests.

6. New Technologies of Interest to the Committee:
As new technologies surface that are commercially viable, ESSB plans to engage subject matter experts to develop technical awareness and understanding, as well as the creation of standards (guides/best practices) in those areas. Currently, flow batteries, engine start batteries used in ESS applications and flywheels used in UPS and ESS applications are of primary interest. Energy Management Systems, from both a software and hardware development standpoint are of increasing interest.

7. Significant Plans for the Next Period:
The ESSB Committee is conducting a major tutorial for the Federal Electric Regulatory Commission (FERC) on February 7. This will be followed with a similar tutorial presented at the IEEE T&D Exhibition in Denver in April.

ESSB will undertake a goal to increase foreign membership, perhaps with a pilot "satellite" group in one of the regions mentioned in #8 below.

8. 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

Note: The ESSB Committee is young in it's structural formation. The majority of members come from North America. We are investigating ways in which we can develop a bigger international presence. See 2nd paragraph in #5.

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
68	1	1	2

Submitted by: Chris Searles **Date: Jan 31, 2018**