SBE Announces National Award Winners

The 2019 SBE National Awards, which recognize excellence and achievement by individual members, SBE chapters and Sustaining Member companies, have been announced. The two highest individual awards are the Robert W. Flanders SBE Engineer of the Year and the James C. Wulliman SBE Educator of the Year.

The Robert W. Flanders SBE Engineer of the Year award is presented to a member who has excelled in his or her career while furthering the mission of the SBE. Candidates are nominated by their peers. The winner of the award for 2019 is Charles Wooten of Panama City, FL.

The recipient of the James C. Wulliman SBE Educator of the Year award is recognized for outstanding service and excellence in sharing knowledge through teaching other broadcast engineers. The winner of the 2019 James C. Wulliman SBE Educator of the Year award is Bill Hubbard, CPBE, of Green Bay, WI. Hubbard is a member of Chapter 80.

On October 10, 2018, Hurricane Michael bared down on the Florida Panhandle. The Category 5 hurricane came ashore and knocked out terrestrial and wireless communications and all utilities. Because of Charlie’s experience, planning and system redundancy, the citizens of Bay County tuned in their radios the morning after the storm and found iHeart Media signals live. Locals had access to critical information regarding, food, water and emergency health care.

Bill Hubbard recently retired from a long career in broadcast engineering. Bill is a charter member of Chapter 80. Among his service with the University of Wisconsin Green Bay, Bill spent much of his time volunteering with the Wisconsin Broadcasters Association Broadcast Clinic Program Committee. In that role, he assisted in putting together two educational seminars each year. Bill has also helped contribute to the “Media Technology Institute,” a seminar to train new graduates in the basics of broadcast engineering. In 2019, Bill also developed and helped implement an

SBE National Meeting Webcast to Air Live from Broadcasters Clinic

If you aren’t able to attend the SBE National Meeting this year in person, do the next best thing and tune in to the live webcast of the Annual SBE Membership Meeting. It takes place from 4:00 to 5:00 p.m. EDT (1:00 p.m. – 2:00 p.m. PDT) on Wednesday, Oct. 16. The meeting is part of the SBE National Meeting, this year being hosted by the Broadcasters Clinic in Madison, WI.

Hosted by SBE President Jim Leifer, the webcast will include updates on the latest developments with SBE education, certification and frequency coordination. The newly elected officers and directors of the national SBE Board of Directors will be inducted. An interview segment with a special guest, to be announced, will also be featured.

To tune in, go to the SBE website (sbe.org) and click on the webcast icon. Reminders will be emailed to members the day before and the day of the webcast.

SBE National Meeting events begin on Tuesday, Oct. 15 with meetings of the national SBE Certification Committee and the SBE Board of Directors. On Wednes-

see AWARDS, p. 8

see WEBCAST, p. 9
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Vote by August 28 in SBE Election

The annual election of SBE officers and directors is currently underway. Up for election are all four officers for one-year terms and half the 12 directors for two-year terms.

All ballots are due by 4:30 p.m. EDT on Aug. 28. Voting is via the election website, except for those members who have opted out of electronic voting this year or who have not provided the SBE national office with an email address. They will receive their ballots through the mail. An email test message was sent on July 10, and the ballot link was sent to valid email addresses on July 26. Reminder emails will also be sent.

For members who received a paper ballot in the mail, your ballot must be received in the SBE National Office by mail, express delivery or in person (no facsimile). An email with an email address. They will receive their ballots through the mail. An email test message was sent on July 10, and the ballot link was sent to valid email addresses on July 26. Reminder emails will also be sent.

For members who received a paper ballot in the mail, your ballot must be received in the SBE National Office by mail, express delivery or in person (no facsimile) by 4:30 p.m. ET on Aug. 28. If you have not yet cast your vote, do so today.

SBE Election Candidate Slate

Directors: (top six vote getters will be elected):
- Dave Bialik, CBT; Chapter 15 New York; New York, NY
- Mark Fehlig, PE, CPBE, 8-VSB; Chapter 40 San Francisco; Walnut Creek, CA
- Jeff Juniet, CBTE; Chapter 42 Central Florida; Orlando, FL
- Charles “Ched” Keiler, CPBE, 8-VSB, CBNE; Chapter 53 South Florida; FL
- Lauderdale
- Gary Kline, CBT; Chapter 5 Atlanta; Atlanta, GA
- Geary Morrill, CPBE, CBNT; Chapter 91 Central Michigan; Saginaw, MI
- Jason Ornellas, CBRE, CRO; Chapter 43 Sacramento; Sacramento, CA
- Chris Tarr, CSRE, AMD, DRB, CBNE; Chapter 28 Milwaukee; Milwaukee, WI
- Dan Whealy, CBTE; Chapter 96 Rockford; Waterloo, IA
- Randy Woods, CBNE; 42 Central Florida; Orlando, FL

IMMEDIATE PAST PRESIDENT
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- jmassey@sbe.org

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- Frequency Coordination Manager
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- asullivans@sbe.org

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SBE National Office
317-846-9000 www.sbe.org

August 2019
SBE, DoD Partner on Frequency Coordination

Part of the SBE’s mission is to create working alliances within the broadcast industry and with those who work in our space. Over the past several years, the SBE has been working with the U.S. Department of Defense (DoD), which has been provided co-principal status with broadcasters in the 2025–2110 MHz Broadcast Auxiliary Spectrum (BAS) band as a result of the Advanced Wireless Services-3 (AWS-3) transition.

The DoD plans to deploy a number of training systems that utilize this spectrum it now shares with broadcasters. In our meetings with the DoD together with the NAB, we have discussed how broadcasters use this spectrum and its importance for electronic news gathering. It became clear to DoD officials that to operate their defense systems without causing or receiving interference, a substantial frequency coordination effort would need to be initiated, providing near-real-time coordination in some cases. The DoD turned to the SBE for help.

The SBE has for many years facilitated a network of volunteer frequency coordinators, most through our local chapters, across the United States and its territories. Though the majority of the country is covered by this network of volunteers, there are markets where no coordinator currently exists.

The systems the DoD intends to deploy will be located at installations of all the military branches, including the national guard and reserves. These installations are ubiquitous and located in urban and rural areas. The DoD, with the endorsement of the NAB, asked the SBE to employ a national frequency coordinator, paid for with DoD funds, who would work with our established volunteer coordinators and cover the areas that don’t have their own local coordinator.

The SBE Board of Directors then went to work to determine the structure and administration of this effort, and the resources it would require. We submitted a proposal to the DoD through its primary contractor, Alion Science and Technology, to provide national frequency coordination services that will mutually serve the needs of the DoD and broadcasters. The proposal was ultimately accepted in May of this year, and I am happy to say that the program officially began in June.

The SBE has hired the broadcast consulting firm of Technical Broadcast Solutions, Inc. (TBSI) of Middletown, DE. Its principal is RJ Russell, CPBE, a 20-year member of the SBE, chair of the SBE Frequency Coordination Committee, and until recently, SBE national vice president. TBSI is heavily involved in TV re-pack and ATSC 3.0 implementation work for clients and is taking on the SBE as a major client to serve as our national SBE Frequency Coordination Manager (FCM). RJ has been heavily involved, along with SBE General Counsel Chris Imlay, in working with DoD officials and the NAB to develop a workable solution for this shared spectrum. RJ is most knowledgeable in this area and we are fortunate to have him and his firm on board.

RJ provides insight into the details of this spectrum-sharing effort in the Engineering Perspective column in this issue of The Signal. I encourage you to read it. The sub-contract agreement with Alion for this DoD project is a large responsibility for the SBE; one that will last approximately six years, and possibly longer. I am pleased to say that it will not use member dues for any of it, and in fact, a portion of the funding received from the project will help support traditional SBE programs.

Membership Drive Success: 59 New Members

The 2019 SBE Membership Drive, themed “Invest in Yourself, Invest in Your Future,” brought in 59 new members. Each member who recruited a new member was entered into a drawing to win prizes donated by several SBE Sustaining Members and the SBE.

The Grand Prize winner, who receives an expense-paid trip to the SBE National Meeting in Madison, WI, this October, is Paul Jewusiak of Anchorage, AK. All the prize winners are listed here. Thanks to the SBE Sustaining Members who donated prizes for the Membership Drive.

Recruiters also earned $5 off their 2020 dues renewal for each new member recruited. SBE members who recruited three or more new members received an upgrade to SBE MemberPlus.
Does Anybody Really Know What Time It Is?

Have you ever asked a broadcast engineer “What time is it?” and minutes later you feel like it was explained to you how the clock was made, but you still wonder what the time is? Broadcast engineers are often obsessed with time likely because they are surrounded by it. The radio engineer has likely programmed an automation schedule built around precise time program clocks that outlines the content broadcast throughout the day. Precise in terms of accuracy to the second. And of course the all-familiar FCC required legal ID at the top of the hour. The TV engineer has likely distributed analog time code throughout a broadcast facility with the intention of locking video tape recordings to a precise and consistent time reference for editing purposes. Precise in terms of accuracy to the sub-second or video frame. As broadcast facility infrastructure has moved to the information technology (IT) environments, precise time references such as the Internet Protocol (IP), Network Time Protocol (NTP), and the Precise Time Protocol (PTP) have emerged. Precise in terms of accuracy to 1 ms for NTP and 3 μs for PTP.

Precise and synchronized time references have existed long before the first broadcast stations. In the 1850s, Western Union utilized the telegraph system to distribute time signaling from the US Naval Observatory in Washington, DC. This time reference was used to synchronize clocks in the railroad system throughout the nation. History indicates that this nationwide clock history remained in service into the 1970s and faded away as Western Union faded away. Today, a Western Union railroad clock is considered a cherished collector’s item.

Today, Global Positioning System-based (GPS) time references are an integral component of the broadcast technical facility, often capable of supplying time references in several formats ranging from SMPTE time code, to NTP, and PTP. The distributed nature allows a single reference to supply time information to a variety of devices throughout the facility in lieu of each device containing its own GPS-based reference. In addition, a 10MHz frequency reference is often provided by these references, which is useful to check calibration of the station’s frequency measuring devices. A 1 pulse-per-second (pps) output can also be used to synchronize other devices in the facility. GPS references are described in Stratum levels with a Stratum 0 clock defined as a high-precision reference clock, and a Stratum 16 defined as an unsynchronized clock. The Stratum n description refers to the device distance from the reference source rather than an indication of accuracy. A Stratum 2 time server can query multiple Stratum 1 sources to provide a stable and very accurate time reference.

Time code known as SMPTE 12M-2 can be found in two formats: Longitudinal (LTC) or Vertical-Interval (VITC). Time is presented in the format of hours:minutes:seconds:frames or HH:MM:SS:FF, and represented by a 32-bit binary coded decimal (BCD) number identifying an individual frame of video. In order to correct for the 29.97 frames per second rate of color NTSC, drop-frame (DF) time code is commonly used. It is typically represented as HH:MM:SS:FF with the semicolon indicating the drop-frame mode. The name is often misleading as no frames of video are actually dropped. Instead, a few time codes are dropped to match the timecode with clock time.

NTP is a protocol for time synchronization over packet-switched networks or today’s common IP network. Now in version 4 (NTPv4) as defined by Internet Engineering Task Force (IETF) Request for Comments (RFC) 5905 providing accuracy to 1 ms. NTP is based on a client-server model incorporating an algorithm accounting for inherent network latency. For many, NTP is an excellent (and easily implemented) approach to time sync devices in the broadcast facility such as automation system components and network content sources.

PTP is defined under the IEEE-1588 standard now implemented in version 2 or IEEE-1588-2008. PTP is also a master-slave architecture similar to NTP, but provides accuracy in the sub-second range. IEEE 1588 is used in in-network applications where accuracy is required beyond the capabilities of NTP such as industrial automation and financial transaction markets. It is becoming common in the truly IP-based TV networks such as SMPTE ST-2110. NTP utilizes the Unix epoch. The Unix epoch (also known as POSIX time or Unix time) is based upon the number of seconds occurring since Jan. 1, 1970, as each day consists as 86,400 seconds. Unix time is represented by a 32-bit integer string such as “1560862759.” The Internet provides ample time conversion utilities and the current Unix time can also be found at time.is/Unix_time_now.

It’s no wonder a broadcast engineer is often obsessed with time when the day is expressed in terms of seconds, frames, milliseconds, and even microseconds. Oh, and you did ask what time it is. This column was submitted to the editor at 1561380426, which was prior to the deadline of 1561766399.

Your SBE Education Committee is here to help achieve your professional development goals. Let us know your thoughts on current and future programs, lend your advice and guidance to your SBE Education Committee to help establish the right mix of educational content to meet your professional development needs.
ATSC 3.0 SBE Certification Moves Forward

Developing a new test takes time, especially when we utilize a new technology that is still being developed and newly implemented. A small group of ATSC 3.0 experts are working with the SBE Certification Committee to create the new ATSC 3.0 specialist certification. The group has identified a list of reference materials (Table 1) that will be covered in the exam. You can also access these standards on the SBE website under certification/exam preparation. There are links to each standard.

In addition to these links, the SBE Education program has produced a number of webinars aimed at the ATSC 3.0 technology. You can access these Webinars by SBE on demand, and SBE MemberPlus members can access all of them for free. See the list in Table 2.

The work to prepare the ATSC 3.0 SBE Specialist certification continues to move forward, and once it is ready, watch for announcements so you can apply to take the exam to earn the new certification mark.

<table>
<thead>
<tr>
<th>ATSC Standard</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>A/300:2017</td>
<td>ATSC 3.0 System</td>
</tr>
<tr>
<td>A/321:2016</td>
<td>System Discovery and Signaling</td>
</tr>
<tr>
<td>A/322:2018</td>
<td>Physical Layer Protocol</td>
</tr>
<tr>
<td>A/324:2018</td>
<td>Scheduler/Studio-to-Transmitter Link</td>
</tr>
<tr>
<td>A/327:2018</td>
<td>Physical Layer – Recommended Practice</td>
</tr>
<tr>
<td>A/330:2019</td>
<td>Link Layer Protocol</td>
</tr>
<tr>
<td>A/331:2018</td>
<td>Signaling, Synchronization, Delivery and Error Protection</td>
</tr>
<tr>
<td>A/360:2018</td>
<td>ATSC 3.0 Security and Service Protection</td>
</tr>
<tr>
<td>A/327:2018</td>
<td>Guidelines for the Physical Layer Protocol</td>
</tr>
<tr>
<td>A/351</td>
<td>Techniques for Signaling, Delivery and Synchronization</td>
</tr>
</tbody>
</table>

Table 1. ATSC standards available through the SBE website.

Table 2. Available Webinars by SBE

**Webinars by SBE Covering ATSC 3.0**

**SBE ATSC 3.0 Networking Series**
- ATSC 3.0 Networking, Module 1 Introduction to ATSC 3.0 Station Architecture, Networking Standards and the Physical Layer
- ATSC 3.0 Networking, Module 2: Ethernet Switching
- ATSC 3.0 Networking, Module 3: IP Routing

**SBE ATSC 3.0 Series**
- ATSC 3.0, Module 1: Introduction to ATSC 3.0
- ATSC 3.0, Module 2: Overview of the Physical Layer
- ATSC 3.0, Module 3: Implementation of the Transport and Physical Layers
- ATSC 3.0, Module 4: MPEG Media Transport Standard and Its Use in ATSC 3.0
- ATSC 3.0, Module 5: ATSC 3.0 ROUTE Protocol
- ATSC 3.0: Module 6: Advanced Emergency Information System

Answer from page 3

Pressurizing a line with desiccated air or nitrogen minimizes moisture in the line caused by heating and cooling of the inner and outer conductors, and reduces the chance of moisture entering through any leaks. This will reduce the chance of a voltage arc within the line.

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CQ

The answer is A

2019 Chapter Engineers of the Year

In conjunction with the SBE National Awards program, SBE members who are honored by chapters as a chapter engineer of the year are automatically entered into consideration for the Robert W. Flanders SBE Engineer of the Year award. Seven SBE members were selected by their chapters for the local honor this year.

- Alex Brewster, CBRE, CBNT; Ch. 16 Seattle
- John Gold, CSTE; Ch. 32 Tucson
- David Halperin, CBRE; Ch. 38 El Paso
- John Gray; Ch. 59 Kansas City
- Robert Leskovec; Ch. 70 Northeast Ohio
- Paxton Durham; Ch. 78 Blue Ridge
- Stuart Muck, CBRE; Ch. 80 Fox Valley

Each honoree will receive a plaque and will be featured in the next issue of The Signal.
CONGRATULATIONS

LIFE CERTIFICATION
Certified Professional Broadcast Engineer (CPBE)
Danny Shoen, Lexington, KY - Chapter 35
Certified Professional Broadcast Engineer (CPBE)
Robert Weiss, Philadelphia, PA - Chapter 18

Certified Professional Broadcast Engineer (CPBE)
John Birset, Bedford, NH - Chapter 110
James Meyers, Ml. Wolf, PA - Chapter 41

Certified Broadcast Operator (CTO)
OPERATOR (CTO)

Certified Radio License Completion School Exams
SPECIAL PROCTORED

Certified Broadcast Radio Engineer (CBRE)
JUNE EXAMS
Michael DeLaRossa, Quincy, IL - Chapter 49
Certified Broadcast Television Engineer (CBTE)
Ryann Dale, Delphi, IN - Chapter 25
Phat Le, Salt Lake City, UT - Chapter 62

Certified Audio Engineer (CEA)
Frank Cerbini, Jr., Belmore, NY - Chapter 15

Certified Broadcast Networking Engineer (CBNE)
Certified Senior Radio Engineer (CSRE)
Certified Professional Broadcast Engineer (CPBE)
Tanner Morgan, Sulphur Rock, AR
Natalie Looney, Sulphur Rock, AR

Bates Technical College
Luciana Barrera, Federal Way, WA
Solei Bates, Pueblo, WA

SBE CERTIFIED SCHOOL COMPLETION

Certified Broadcast Operator (CRO)
SPECIAL PROCTORED

Certified Broadcast Networking Engineer (CBNE)
Nathan Russell, Indianapolis, IN - Chapter 25

Tyler Holdener, Calgary, AB
Anthony Hosemann, Calgary, AB
Li Linczou, Calgary, AB
Blayne Ly, Calgary, AB

Certified Senior Radio Engineer (CSRE)
Gregg Richwine, Des Moines, IA - Chapter 109

Certified Broadcast Networking Technologist (CBNT)

Certified Broadcast Televisc Engineer (CTO)

Londal Thorpe, Kissimmee, FL
Doron Smith, St. Petersburg, FL
Callisto Wade, Oil Trough, AR
Kevin Lovelace, St. Petersburhg, FL

CERTIFIED BY LICENSE

Certified Broadcast Technologist (CBT)
Certified Broadcast Networking Technologist (CBNT)
Certified Broadcast Television Engineer (CBTE)

Got your SBE Certification pin?
sgbo/pins

SBE Certified Achievement

New Castle Career Center
Blake Burns, New Castle, IN
Drew Cupp, Knighstown, IN
Maddox Matthews, Shirley, IN
Simon Pierce, Lewesville, IN
Nick Stearns, New Castle, IN

Pasadena City College
Laurie Jocuo, Los Angeles, CA
Casey Johnson, Pasadena, CA
Stephanie Meade, Studio City, CA
Esteban Sanchez, El Monte, CA
Malick Sanneh, Los Angeles, CA
Yael Soto, San Gabriel, CA
Daniel Vozlonz, Pasadena, CA
Daniel Won, Los Angeles, CA

CERTIFIED TELEVISION OPERATOR (CTO)

Certified Broadcast Operator (CRO)

Katrina Alexander, East Chicago, IN
James Edwards, Oklahoma City, OK
Sandra Edwards, New Bern, NC
Steven Smith, Long Beach, CA
San Benito High School
Jacob Garcia, San Benito, TX
Leticia Gutierrez, San Benito, TX

Bates Technical College
Luciana Barrera, Federal Way, WA
Solei Bates, Pueblo, WA

RECERTIFICATION

Applicants completed the recertification process either by re-examination, point verification through the local chapters and national Certification Committee approval and/or met the service requirement.

Certified Broadcast Technical Operator (CBTO)

Certified Broadcast Operator (CRO)

Certified Broadcast Operator (CRO)

August 2019
The SBE conducted its third compensation survey in April and May. The survey goal is to provide practical information to SBE members about individual compensation (salary and benefits) based on the type of broadcast or multimedia involvement, market size, and job title category. 479 respondents answered all the survey questions.

We asked if respondents received a raise in the last year, and if so, how much, and to report benefits received. We also asked about contract engineering rates and practices.

Respondents were asked if they held any broadcast- or media-relevant professional certifications. We also compared salaries of respondents with and without SBE Certification and reported the results. Shown here are samples of the full survey results.

The survey report is available via the SBE Bookstore and is free to SBE members as a member benefit. You will need your SBE website login to access it. Also, the PDF report is password protected. The password is noted on the download page. Non-members can purchase the survey via the SBE Bookstore.

If you participated in the survey this year, thank you. We encourage your participation next year so we can provide the most useful results.

AWARDS

incentive plan for Chapter 80 members to become SBE certified. The plan allows for Chapter 80 fundraising proceeds to be used to reimburse members for SBE certification exams and study materials.

Blackmagic Design has been awarded the 2019 SBE Technology Award for its 8K Workflow Technology. The 8K Workflow Technology revolutionized the broadcast industry with the introduction of a complete range of 8K broadcast workflow products. To make sure customers truly benefit from these 8K products, this is based on the latest hardware processors running an embedded Linux operating system, which incorporates 30 years of experience and knowledge in the remote site management industry.

Chapter and Individual Awards

Chapters are the lifeblood of the SBE, and 2019 marks the seventh year that the Chapter Engineer of the Year Award has highlighted the achievements of members within their chapters. This year, seven chapters selected their own award recipients. Each winner will be presented with a special plaque and be recognized nationally on the SBE website and in a future issue of The Signal. The seven chapter winners also were automatically nominated for the national Robert W. Flanders SBE Engineer of the Year Award.

The 2018 Broadcasters Clinic in Wisconsin has won for Best Chapter Regional Educational Event. Chapter 16 in Seattle, WA, has won for Best Chapter Communication.

Doug Irwin, CPBE, AMD, DRB, of Chapter 47 has won the award for Best Technical Article, Book or Program by an SBE member for his three-part *Radio World* article series on the Repack.

**Statistical Awards**

**Greatest Growth in New Members**

Class A: Chapter 115, Southern Idaho, Chapter Chairman Thomas Kettwig, CBTE

Class B: Chapter 85, Central Western Oklahoma, Chapter Chairman Brian Ryel, CBTE

**Most Certified Chapters**

Class A: Chapter 7, Jacksonville, FL Chapter Chairman Brian Ryel, CBTE

Class B: Chapter 24, Madison, WI, Chapter Chairman Britny Williams, CBTE, CBNT, and Certification Chairman James Hermanson, CPBE, CBNT

**Highest Member Attendance**

Class A: Chapter 112, Western Wisconsin, Chapter Chairman Todd Zschemtz, CBTE

Class B: Chapter 79, Austin, TX, Chapter Chairman Ed Rupp, CBTE, CBNT

Nominations for the 2020 awards will open in February.

Class awards are determined using the median chapter size as of Dec. 31, 2018, as the dividing line between Class A (fewer than the median) and Class B (more than the median).
In April, the SBE partnered with PBS to produce a day-long educational program at the end of the 2019 PBS TechCon. Fred Baumgartner organized the presenters to deliver an extensive program about ATSC 3.0. The presentations were designed to give attendees real insight into implementing and getting the most out of ATSC 3.0 at their stations. Topics ranged from regulations and the physical layer to how to convert a transmitter and proof it. Other practical topics were covered by showing receivers,dongles, displays and test and measurement tools that are available, and how to use them. The presenters list is a who’s who of NextGen Broadcast development.

A team of subject matter experts gathered to deliver a nine-part program. The day’s sessions were recorded, and are being offered online through Webinars by SBE. SBE members can watch each installment for $59. Non-members can watch them for $89 each. SBE MemberPlus members have full access to them, plus all the Webinars by SBE in the library. Paid registrants for SBE @ PBS TechCon will receive access instructions by email.
Microsoft Corporation is attempting to breathe new life into what is left of the UHF television band, and in the process it is making wireless microphone manufacturers very much concerned. Here is what is happening so far.

On May 3, 2019, Microsoft filed a petition for rulemaking in ET Docket 14-165, asking the FCC to issue a further notice of proposed rulemaking in that Docket to liberalize the rules governing TV White Spaces Devices (WSDs) in the UHF television bands. Microsoft noted that the 2014 Notice of Proposed Rulemaking in that docket was primarily focused on changes needed to allow the UHF TV-band incentive auction to proceed, which was two years ago. Now, says Microsoft, there is a need for some “refinements to the rules governing WSDs in order to promote “rural deployment” of broadband (a key buzzword at the FCC these days). Microsoft proposes to (1) permit fixed WSDs in the second-adjacent channel to broadcasters in less congested areas to operate at a higher radiated power limit; (2) to permit fixed WSDs to operate at greater than 40 mW on the first-adjacent channel at locations within the protected service contour of the Station where the potential for harmful interference is low; (3) to permit fixed WSDs to operate at heights above average terrain of up to 500 meters, subject to a special set of coordina-
tion procedures modeled on the Part 101 rules; (4) promote development of narrow-
band WSDs that can support IoT applications by modifying existing technical and operational rules and providing licensees the same level of protection from harmful interference as the rules for broadband WSDs; and (5) permit geofenced operation of fixed WSDs on mobile platforms.

Microsoft claims that these changes will eliminate needless WSD regulations, allow Microsoft to partner with companies to advance affordable rural broadband, provide new classes of uses and in the rural economy, and stimulate innovative IoT applications.

It took the FCC only six days to place this Petition on public notice, and afford

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Microsoft says that interference caused by WSDs has not been a problem, which is probably true (though unquantified) because (1) it is hard to ascertain the cause of a given interference source in the context of operating mobile wireless microphones, and (2) because there is not a high level of WSD deployment so far.

It is not a great strategy these days to argue against anyone who is offering to provide rural broadband to consumers. Sennheiser is well-aware of this. Their comments on this petition make good sense. Sennheiser says that it is in favor of fostering rural broadband, but the rule changes proposed by Microsoft have no place whatsoever in more congested areas. Sennheiser accurately notes that wireless microphones are very intolerant of interference and that “(m)ost applications, such as live news, sports, and stage productions, do not afford the possibility of a second take. This makes any interference unacceptable, regardless of duration.” So Sennheiser suggests the FCC limit the WSD rules sought by Microsoft to “less congested areas”, defined by the FCC at Section 15.703(h) of the Rules as “geographic areas where at least half of the TV channels for the bands that will continue to be allocated and assigned only for broadcast service are unused for broadcast and other protected services and available for white space device use...”. There is no discussion, however, of the limited enforcement resources available to the Commission to enforce a geographic limitation such as this one.

The NAB takes a more straightforward view, and urges generally that WSDs continue to be prohibited in first adjacent channels to television stations. Shure makes the same arguments in their comments as do Sennheiser and the NAB, but in addition argues that the FCC should not allow Microsoft’s proposed geofencing “mobile fixed device” unless it is limited to dramatically lower power levels, and subject to all rules, including distance separation rules, that apply to fixed WSDs. Shure also urges the FCC to review the status of the WSD database and take steps to ensure that it works. Finally, Shure suggests adopting a rule that expands Part 74 eligibility to professional wireless microphone users who may not be eligible under the current rules which restrict eligibility to users who routinely use 50 microphones or more; and if the proposed narrowband WSDs are to be allowed, they should be required to comply with the same emission mask requirements as wireless microphones.

It is getting harder and harder to find UHF spectrum for wireless microphones, and major events are going to have a very difficult time finding sufficient channels in which to operate for ENG and event production purposes. The SBE’s view is that this is not the best time to attempt to revive a concept that has simply not been validated or to limit further the few remaining opportunities for UHF wireless microphone operation.
# 69 Chapters Earn Quality Chapter Status

For many SBE members, the local chapter provides access to affordable continuing education and a ready network of contacts and friends in the industry. The SBE likes to recognize chapters that meet those needs by rewarding them with an annual rebate of a portion of the SBE dues paid by its members.

The chapters have to qualify for the rebate by holding at least five meetings during the calendar year and documenting those meetings to the national SBE office. Documentation includes a brief description of the meeting and a list of attendees.

In 2018, 69 chapters qualified for Quality Chapter status and the SBE paid out a total of almost $38,000 to them. Chapters typically use the money to fund their own operations. Expenses can include website hosting fees, printing, postage, scholarship programs, and sometimes meals for chapter meetings or social events. SBE instituted the rebate system many years ago to help chapters avoid the administrative burden of collecting local dues, instead, allowing them to concentrate on producing successful meetings and other chapter functions.

Below is a list of chapters that attained Quality Chapter status during 2018 and received a cash rebate from the national SBE office in June of this year. Our congratulations to them and to their leadership!

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<tr>
<td>1 Binghamton</td>
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<td>51 Tri-Cities</td>
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<td>Ben Pflederer</td>
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<td>102 Grand Rapids</td>
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<td>103 Nashville</td>
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<td>105 Houston</td>
<td>Thomas Daniels, Jr., CPBE</td>
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<td>109 Des Moines</td>
<td>Jon Strom, CBTE</td>
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<td>111 Huntsville</td>
<td>Kevin Kidd CSRTE, AMD, DRB, CBNE</td>
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<td>112 Western WI</td>
<td>Todd Zschernitz, CBTE</td>
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**Chapter Check**

**Chapter 37 District of Columbia**

In June, Chapter 37 District of Columbia met at WTOP in a combined SBE/AES/SMPTE gathering. About 73 people attended the meeting that evening, which covered the recent facility build of the station. WTOP engineers and contractors provided insight into the project. Photo by Fred Willard, CPBE, 8-VSB, CBNT.
Sharing Is Caring

We all remember our kindergarten lessons on the value of sharing and how sharing can work out best for everyone involved. Now it’s time that we apply this lesson to the 2025-2110MHz Broadcast Auxiliary Spectrum (BAS) band we are all familiar with for electronic news gathering (ENG), Cable Television Relay Service (CARS), and Local Television Transmission Service (LTTs). As part of the Advanced Wireless Services-3 (AWS-3) transition, the Department of Defense (DoD) has been provided co-primary status in this band for some of its systems. Welcome to the days of inter-service instead of intra-service frequency coordination.

The DoD will develop transition plans for four systems that need to be able to access this spectrum. The first and simplest to integrate is Tactical Radio Relay (TRR). These systems are ground-to-ground, field-deployable radio systems. The second is Small Unmanned Aerial Systems (SUAs). These are small, hand-launched drones comparable to what broadcasters have begun using for ENG. The third is Tactical Targeting Network Technology (TTNT), and the fourth is High Resolution Video (HRV). We are still developing the definitions for these systems. 

**Tactical Radio Relay (TRR)**
These radios operate two 3MHz signals, one to transmit and one to receive, that require 50MHz of separation. This is not due to out-of-band emissions (OBOE) but a requirement of some of their radios. There are two TRR systems, one for the Army and one for the Navy, with which we have already conducted field tests. The Army system was tested in conjunction with WRAL-TV at Fort Bragg, NC, and the Navy system was tested in conjunction with KUSI-TV at Camp Pendleton, CA. We are still working on flushing out all of the test reports and will make those available to our frequency coordinators and members when they are available. These tests proved that the systems can operate within the band successfully without interference provided proper coordination has taken place.

**Small Unmanned Aerial Systems (SUAs)** These systems are still under development by DoD contractors. The SBE and the NAB were invited to watch a field trial from various manufacturers to observe the spectrum emissions to have a better understanding of how these may be integrated into the band. The systems we observed operated on a 5MHz signal using time-domain for bi-directional communications to keep everything within that pedestal.

If we look at these two systems and how they can be integrated into the existing BAS band-plan, it’s fairly simple: We add them to the home channel plans in the television markets affected. We have already added them in some of the priority markets by evaluating the existing channel plan and optimizing it for both broadcaster and DoD usage. In the chart below you will see the priority markets and those where we have successfully added the DoD to the home channel plan. In the majority of cases we have split their home channel between A1 lower (2025.5-2031.5 MHz) and A7 upper (2103.5-2109.5 MHz). This allows the two primary systems we are currently working with, TRR and SUAs, to operate without interfering with broadcast operations nor broadcast operations interfere with DoD operations. This chart also provides two other examples of coordination we are working on.

In the case of Ft. Irwin, CA, we are attempting to allow them to use the full spectrum since this is a geographically isolated area and some preliminary testing that was conducted several years ago didn’t show any interference to the area broadcasters. We are working to firm this up to allow the DoD to begin moving forward with operations in this area.

Coordinating Redstone Arsenal, AL, has proven to be much more difficult as the home channel plan is completely full, partially due to several fixed links used for news bureaus in use. We couldn’t identify a home channel for the DoD in this market so instead we identified a primary and secondary sharing partner for them to work with. In this case, the DoD will contact its partners and work out a real-time coordination plan when it needs to use the spectrum.

While we anticipate one of these plans will work in many markets, we know there will always be exceptions to the rule. Our goal is to find the right plan for the right situation, define it, and ensure there are open lines of communication. As we continue to move forward with these transitions, we will be looking to work with the local frequency coordinators and licensees to find a way to say “yes” to DoD coordination requests. Our experience has been that the DoD is willing to work with us, develop databases and clean-up existing licensee data, and help us develop tools to facilitate real-time coordination. In other words, a partner that understands sharing is a two-way street.
**Member Spotlight: Stan Carter**

**Member Stats**

SBE Member Since: 2013  
Chapter: 125 Mississippi  
Employer: Educational Media Foundation  
Position: Field Engineer – MS/LA/AL  
Location: Pearl, MS  
I'm Best Known For: Attitude. Always being available to help co-workers when needed.

**Q.** What do you value most about your SBE involvement?  
**A.** The resources and continuing education opportunities. Meeting with fellow engineers to exchange ideas.

**Q.** What got you started in broadcast engineering?  
**A.** A neighborhood ham operator when I was 8 years old. I've been tinkering with electronics ever since!

**Q.** Who do you consider to be a mentor?  
**A.** George Thomas, who hired me as an assistant engineer at WJDX/WMSI in 1988 and I've been in broadcast engineering full time ever since.

**Q.** What do you like most about your job?  
**A.** It's always something different each day!

**Q.** When I'm not working...  
**A.** ...I'm either spending time with my wife, kids and grandkids or playing bass in our church praise band.

**Q.** What's something most people don't know about you?  
**A.** In 1993, I traveled to Ottawa, Canada, to look at a used transmitter. I had never traveled out of the country and no one told me I needed a passport. Fortunately, Canadian customs let me in and back out after a very lengthy explanation.

**Q.** What's your favorite gadget?  
**A.** My Keysight N9912A spectrum analyzer – all time favorite piece of test equipment.

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**Chapter Check**

**Chapter 17 • Minneapolis**

The Chapter 17 Minneapolis annual picnic was held June 28 at the foot of this 1,500’ broadcast tower in Shoreview, MN. Photo by Mark Persons.

**Chapter 9 • Phoenix**

Chris Crump of Comrex catches a selfie at the Chapter 9 June meeting held at K TAR Newstalk 92.3 FM, where the group met for “good barbecue and great conversation.”

**Chapter 85 • Central Western OK**

Don Backus of Rohde & Schwarz discusses liquid-cooled transmitters at the chapter meeting in June.

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**SBE Chapters on Facebook**

The SBE has a group on Facebook called SBE Chapters. It's the perfect place to share photos of your chapter meetings and events, especially if they are interesting, informative or entertaining.

Need ideas for a chapter meeting? Turn to SBE Chapters for inspiration.

[sbe.org/facebook](sbe.org/facebook)

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**Have You Watched?**

The SBE Chapter of the Web

The SBE launched the SBE WEBxtra in January. Part of its objective is growing and retaining membership, attracting new and younger members to the SBE, and increasing participation in SBE activities among members.

Sponsored by Wheatstone, this monthly, virtual program, provides information about the SBE or broadcast technology for SBE members who do not have a chapter near them, or have conflicts that prevent them from attending chapter meetings. Viewing the SBE WEBxtra qualifies for 0.5 SBE recertification points, just like attending a local chapter meeting. Watch past episodes on our YouTube channel.

[sbe.org/youtube](sbe.org/youtube)
Welcome to the SBE

New Members
Rusty D. Backer - Merritt Island, FL
Robert L. Berger - Milan, IL
Beau P. Brakman - Clearwater, FL
Tyler J. Brock - Jacksonville, FL
Albert L. Brown - Zanesville, OH
Aaron Brown - Clearwater, FL
Frank P. Cerbini, Jr. - Belmont, NY
Animam P. Chukwunalu - Lagos, Nigeria
Nicholas Church - Rhinelander, WI
Clarence D. Copeland - Baton Rouge, LA
Steven J. Cuchetti - Wixom, MI
Kenneth S. Doughty - Alvin, TX
Matthew J. Eppright - Kansas City, MO
Alejandro Escarcega - El Marqués, MX
Tyler Everitt - Saskatoon, SK
Francois O. Gauthier - Granby, QC
Robert J. Godlsby - Abernathy, TX
Rachel A. Haggerty - Iselin, NJ
Ma'en Halawani - Clearwater, FL
Markel S. Hawkins - Silver Spring, MD
Alejandro Hernandez - Long Beach, CA
Cody L. Howard - Eagle River, AK
Carly Inselmann - Clearwater, FL
Rod Julian - Soap Lake, WA
Robert Karlinsky - Milwaukee, WI
Michael Kirk - Enfield, NH
Jeremy R. Landers - Clearwater, FL
Alex Mackensen - Charleston, WV
Frank M. Magarelli - Scottsdale, AZ
Cousteau H. Martell - Bend, OR
Josh A. Merrill - Gainesville, FL
Christina Minor - Willow Spring, NC
John D. Moeller - Davenport, IA
Michael W. Moore - Kennewick, WA
Brian Morel - Lincoln, CA

New Student Members
Lewis J. Callaway - Clear Lake, IA
Martin Fournier-Montalvo - Calgary, AB
Tyler M. Grandy - Boise, ID
Brian Hamilton - Calgary, AB
Tyler Holdener - Calgary, AB
Anthony Hosemann - Calgary, AB
Li Linzhou - Calgary, AB
Blayne Ly - Calgary, AB
Tristan McClain - Milton, WA
Louie J. Paccalagan - Calgary, AB
Christina R. Thomas - Calgary, AB
Alyssia Wong - Calgary, AB

New Youth Member
Jacob P. Thomas - Columbus, SC

Returning Members
Peter R. Bankwitz - Saco, ME
Sam Black - Rockville, MD
Matthew J. Butcher - Arlington, VA
Michael Engleheart - Wilmette, IL
Jon E. Hall - Normal, IL
Joshua J. Heymig - Aven, IN
Peter J. Koenig - Grosse Pointe Park, MI
Kwok-Luen Lam - Tai Po, N.T., HK
Steven R. Martin - Burnsville, MN
Jeremiah R. McKenzie - Zanesville, OH
Ethan A. Miller - New Bern, NC
James A. Moore - Madera, CA
Lee A. Moosley - Alberville, AL
Kevin W. Potter - Walland, TN
Robert E. Schwab - Fairfield, OH
Glenn A. Stillwell - Sacramento, CA
Brian S. Vanderwoude - Millbrook, AL

Attending the 147th AES Convention?
The SBE is providing an SBE certification exam session during the convention on Oct. 18 in New York.

Want to take an SBE certification exam while you’re there? Submit your application to the SBE office by Sept. 10. SBE.org/certification

And be sure to check out the broadcast and streaming sessions at the convention. Full details: AES.org/events/147/

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*See REPACK.TV for full details

sbe.org/2023

WEBINARS
Add these upcoming Webinars by SBE to your calendar.
Aug. 22: 50 Tips for the Broadcast Technical Professional
Sept. 19: RF 201: Module 7: FM Filters and FM Combiners
Oct. 23: RF 201: Module 8: AM Multiplexed Antenna Systems
Members On The Move

The Association of Federal Communications Consulting Engineers has elected (left to right) John George as president. John Lyons, CPBE, is treasurer (previously president), Stephen Pumple is secretary, and John Edwards is vice president. They are joined by B. Ben Evans on a four-year term as a member, and Jim Leifer, CPBE, on a three-year term as an associate member.

David Stewart received the Texas Association of Broadcasters George Marti Award for Engineering Excellence at TAB 2019.

Nathan Russell, CBNE, is chief engineer at Black News Channel, Jacksonville, FL.

Juan M. Diaz is senior engineer at Walt Disney Direct-to-Consumer and International, Coral Gables, FL.

Have a new job? Received a promotion? Send your news to Chriss Scherer at cscherer@sbe.org.

MARK YOUR CALENDAR

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