

THE Signal

Bimonthly Publication of the
Society of Broadcast Engineers



The Association for
Broadcast and
Multimedia Professionals

www.sbe.org

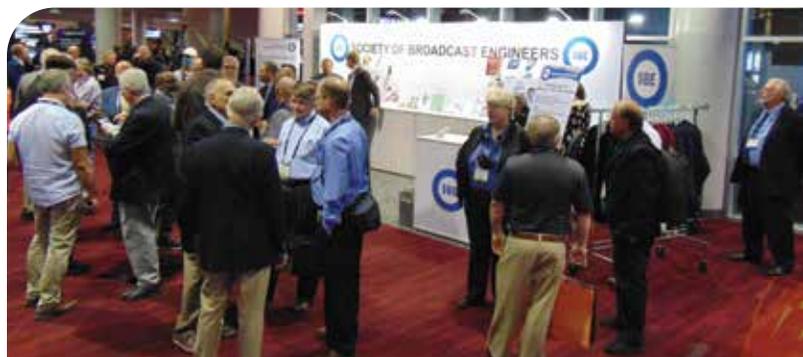
Volume 36, Issue 1 • February 2023

Put the SBE at the Center of Your 2023 NAB Show Plans

With the 2023 NAB Show two months away, the SBE is finishing the details on all its planned activities for the convention. Your time at the convention is limited, so be sure to include the SBE events in assembling your schedule.

The SBE Ennes Workshop has been the traditional kick-off for the convention. This year, it will span two days on April 14 and 15. Unlike previous years, it is separate from the Broadcast Engineering and IT Conference sessions. For 2023, it will be a stand-alone event with separate registration from the convention. Extended details on the Workshop are noted on page 5 of this issue in the Education Update column, but it's important to note that you need to register now at sbe.org and select one of the two educational tracks being offered: RF 101 Boot Camp or NextGen Broadcast. Both will be held at the Westgate Resort, so it's convenient to arrive a day early and attend the SBE Ennes Workshop before the exhibits open. If you register for the SBE Ennes Workshop, you will receive a code for \$150 off your NAB Show conference registration.

The NextGen Broadcast track also serves as an ideal preparation for the SBE ATSC3 Specialist Certification exam. If you are eligible



The SBE booth is often busy with activity.

to take the SBE Specialist exam, register in advance so you can take the exam at the convention. Get the exam qualification details at sbe.org/certification.

see **NAB SHOW**, p. 9

SBE Membership Drive Begins in March

You're reading *The Signal* because you are an SBE member. It's one of many benefits of SBE membership. You know the value that SBE membership offers you, so why not share this with a colleague who is not an SBE member? Now is the perfect time to share that value and recruit a new

member during the annual SBE Membership Drive, which begins March 1. The theme of the drive this year is "The SBE and You: The Perfect Fit."

Talk to your colleagues who are not familiar with the SBE, but could benefit from membership. When you recruit a new member, you might receive some personal benefit in addition to helping the society grow. While anyone can join the SBE at any time during the year, there's an added benefit to joining during the SBE Membership Drive, held from March 1 to May 31.

If you recruit a new member during the Drive and your name is on the sponsor's line of the membership application, your name will be entered into the member drive drawing for prizes donated from our sustaining members. If you recruit a new sustaining member, you'll earn five entries into the prize drawing. Prizes include logo items, books and more from the SBE and many sustaining members. The grand prize is airfare and two nights' hotel stay to attend the SBE National Meeting, planned to be held this fall.

As a recruiter, for every new member you sponsor you will receive \$5 off your 2024 dues (up to \$25). Need more incentive? If you recruit three or more new members, your 2024 membership will be upgraded to SBE MemberPlus.

Start recruiting now, and make sure your recruits list your name on their SBE membership application so you get the credit. 



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Candidates Sought for SBE Election

The annual election of officers and directors to the national SBE Board of Directors will take place this summer. The SBE Nominations Committee seeks qualified candidates who are voting members (Member, Senior, Fellow or the designated representative of an SBE Sustaining Member) in good standing (dues paid). Candidates must hold an engineering level of SBE certification (CBT or higher, or CBNE) and maintain it the entire duration of service on the Board, if elected. Candidates should have a desire to serve the board and through service as a national committee chair or member. Members of the Board represent all members, not a specific region or chapter. It is suggested that candidates have previous experience as a leader in his or her local chapter, or other volunteer leadership experience, prior to running for the national SBE Board, but this is not required.

Members of the Board are expected to

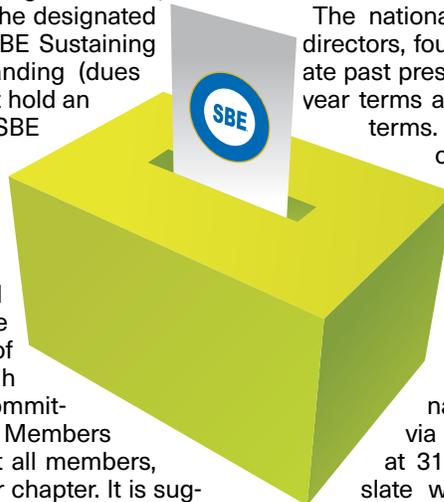
attend two regularly called meetings each year: in the spring, held during the annual NAB Show, and in the fall, at the annual SBE National Meeting. Other meetings may be called via conference call during the year.

The national SBE board includes 12 directors, four officers and the immediate past president. Directors serve two-year terms and officers serve one-year terms. Six director seats will be contested in 2023 as will all four officer positions.

The SBE By-laws limit the number of terms for elected members of the Board.

If interested, contact SBE Nominations Committee Chair Wayne Pecena at wpecena@sbe.org or via the SBE National Office at 317-846-9000. A nomination slate will be assembled by the committee by April 17. Other qualified members may be nominated by members no later than June 30.

The election runs from July 14 to Aug. 15. Those elected will be installed at the SBE National Meeting, held this fall.



Register for the 2023 Leadership Development Course

Registration is now open for the 2023 SBE Leadership Development Course, Aug. 2-4, 2023 in Atlanta. Make plans now to take part in this SBE tradition started in 1997. Dr. Abram Walton, the founder of Ivory Bridge Group, a management consulting and training firm, will teach this course again in 2023.

Specifically designed for broadcast engineers who have or aspire to have management responsibilities, the SBE Leadership Development Course is for technically adept people to acquire and develop skills for sound leadership, supervisory and management skills. The SBE Leadership Development Course is equally beneficial for those who are already in management and for those without prior management or supervisory experience.

The three-day event challenges attendees to refine leadership skills and better understand and improve interaction with others. Broadcast organizations may want to consider sending a group of employees to the course to share the experience of this highly interactive event. Registration includes all course materials, three days of instruction, the Leadership Development Webinar Series of three webinars, a certificate of completion, light breakfast and afternoon snacks. SBE Members receive a discount on registration.

The cost is \$720 for SBE Members and \$775 for Non-Members. Get more information and register at sbe.org/ldc.



Certification Question



SBE CERTIFIED

Answer on page 6



An FCC inspector needs to make an appointment with a station to conduct an inspection of the station.

A. True
B. False



LETTER FROM THE PRESIDENT

By Andrea Cummis, CBT, CTO
SBE President
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Intro To JPEG-XS

My old friend Dennis Lusk of Golden Lady Engineering called me recently to talk about JPEG-XS which I knew nothing about. Dennis sent me a lot of great information that I thought I would share with you.

Many of us are looking to upgrade our facilities to 4K without having to move to an Ethernet or fiber infrastructure. The goal is to have a cost effective, uncomplicated scheme to convert 12G/24G video streams to something that can be handled by existing HD-SDI cabling and equipment. To many in the television industry, switching from an uncompressed format to a compressed one sounds unwise. The only reason to consider it is due to the high bandwidth of uncompressed 4K video reaching the limits of what copper cabling can support.

Although cables and connectors for HD-SDI video (1.5G/3G) are now common, the reality is that the frequency response of copper cables started to reach its limit at 3G. What if there was a "lossless" compression system that could reduce the necessary bandwidth by four or eight times, without adding complexity or latency? Even better! The entire facility can remain synchronous. That standard is available right now, called JPEG-XS.

JPEG-XS Explained

JPEG XS is an interoperable, visually lossless, low-latency and lightweight image and video coding system that targets mezzanine compression within any AV application. Applications of the standard include streaming high-quality content for virtual reality, gaming, and broadcasting.

Companies can actually use it internally with their devices such as router frames to reduce cost. It can be used in live situations because of the extremely low latency; 1 to 32 lines end-to-end; in the microsecond range.

Everything can remain in time, no jumping of frames when switching between sources. If the end to end delay is 16 lines, simply advance the synchronizing signal to the source by that delay of 16 lines.

JPEG XS offers a lightweight compression that visually preserves the quality compared to an uncompressed stream, at a low cost, targeted at compression ratios up to 10:1. This means 11.88 Gb/s or 12G (2160p) can be compressed to travel as 1.485 Gb/s or HD-SDI, which has been in common use for the last 20 years.

Latency

In terms of latency, using MPEG-4/H.264 and HEVC/H.265 in a live production workflow with multiple encoding and decoding steps would lead to a compiled latency of many seconds. JPEG XS has a microsecond-latency and can thus be run throughout a whole live production workflow without inducing the latency of a single MPEG-4/H.264 encode/decode step. Even though we need H.265 for the last mile to distribute it to the consumer, we try to avoid any additional latency in the production workflow before distribution.

Because of the low latency and structured bitrate of JPEG-XS, it

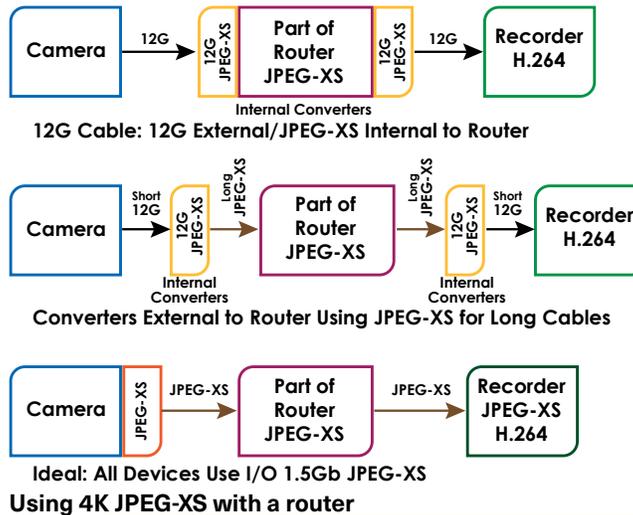
can maintain timing thru the system. Any device that can handle 2160p should be able to use JPEG-XS. There should be a selectable JPEG-XS decoder and coder at the input and output of all major and minor devices.

SMPTE ST-2110

JPEG-XS is part of the SMPTE ST-2110 transmission standard, but it is also packetized for Internet Protocol. It becomes confusing because they are quite different things.

Media transport over Internet Protocol was first defined by ST2022-6 where video can be bundled with, audio, and metadata. It enables media to be moved over IP networks in a single stream or as separate streams. ST2110 and AES67 define how the video, audio, and metadata can be sent separately from anywhere and recombined at the destination. In both cases, the media can then be edited or archived as needed. It is also defined as non-synchronous; before the media can be used it must be resynchronized in a frame buffer before it can be used.

Equipment to support JPEG-XS needs to be available outside of the SMPTE-2110 environment. It would even obviate the need for ST2110 as



the same plant cabling can be used without investing in new infrastructure.

Since JPEG-XS is already used internally in some devices, there needs to be a way to make the encoders and decoders also appear at the input and output of the device. This could be done with a software switch or internal hardware jumpers. The device can then handle uncompressed HD-SDI, 12G or JPEG-XS. Equipment manufacturers need to make the JPEG-XS encoder and decoders available for new equipment at the inputs and outputs. This would include not only routers but cameras and production equipment.

External Devices

It would also be very handy to have external devices to accomplish the conversion for those manufacturers who wish to make it difficult for their clients. They can be in a frame with distribution amplifiers and embedders or can be a small inexpensive throw down box. It would be helpful if they were made by many manufacturers.

- There are many other important features of JPEG XS including:
- Visually transparent compression
 - Extremely Low-latency
 - Lightweight
 - Suitable for any Application
 - Exact Bitrate Allocation
 - Multi-Platform Interoperability
 - Mathematically Lossless
 - High Dynamic Range
 - CFA compression
 - Accurate flow control

JPEG-XS allows for the conversion to 4K in a new or existing facility while maintaining traditional well-established workflow as well as a more cost effective. This format may be worth taking a look at if some manufacturers do more to incorporate it in their equipment in the future.



EDUCATION UPDATE

By Fred Baumgartner, CPBE, ATSC3, CBNT
Organizer, SBE Ennes Workshop at the NAB Show
fbaumgartner@sbe.org

SBE Expands Spring Technical Program

In a return to an extended, in-depth tutorial session presented by the SBE at the NAB Show, the SBE is planning a two-day, two-track event that will be presented on April 14 and 15. The SBE Ennes Workshop at the NAB Show had been a day-long event with multiple presentations built around a theme. As the Broadcast Engineering and Information Technology Conference at the NAB Show reduced the SBE Ennes Workshop to smaller periods over the past few years, the SBE has decided to bring the full workshop back to its in-depth coverage, and is even expanding it to cover two days with two concurrent tracks.

On Friday and Saturday, April 14 and 15, 2023, the SBE will address the two largest gaps in broadcast engineer's knowledge: RF, especially for those with a primarily IT background and others entering the profession, and NextGen Broadcast (ATSC 3.0, etc.). Neither of these are insignificant bodies of knowledge, hence the jam-packed, two-day long sessions.

RF Boot Camp

The SBE has strong relationships with several state broadcaster associations. A common call is the need for RF training. It stands to reason that broadcast engineers entering the profession now largely come from an IT background. Broadcast transmitters have matured to the point where they infrequently require repair and thus, too often the regular informed maintenance and inspections that would have prevented damage and time off-air are ignored.

RF 101 is designed to bring a broadcast engineer with little RF experience to the point where they can properly and safely maintain and update the station's transmission and auxiliary RF services. The course covers AM, FM, TV, STLs, RPU's and satellites. Transmitters, remote control, grounding for lightning, even how AM directional antennas work and how to keep them working and when to call for help. We can't teach everything RF in 16-hours, but we can show you how and where to drill deeper, and you'll learn the language and concepts of RF.

Owners have a responsibility to meet FCC, OSHA and other regulatory requirements and make sure their employees have the skills to work safely on often dangerous high-power equipment. This course can be part of meeting those obligations. The return on investment is the reduction of time off the air and the reduced operating costs that come with proper equipment care. This really is the time for GMs to stretch to send engineers more conversant with IT to RF Boot Camp. If you have recently entered the profession and these increasingly rare skills would help you sleep at night, you might highlight a few lines of this article for your manager and ask them to send you. They understand what training is a critical investment. This is one of those investments.

For more information on any SBE education program click the Education tab at sbe.org, or contact Education Director Cathy Orosz at the SBE National Office at 317-846-9000 or corosz@sbe.org.

3.0 Certification Camp

In a separate session, The Advanced Television System's Committee and the SBE are partnering to provide an in-depth tutorial on NextGen Broadcast. We say "broadcast" rather than "TV" because all manner of content, anything IP (which means everything), is wirelessly distributed on ATSC 3.0. The SBE recently released the ATSC3 Specialist certification. This course is designed to take students through the information necessary to effectively participate in the transition and prepare to take the certification exam. A Certification exam opportunity follows at completion of Day 2 training and those individuals meeting the Specialist requirements can learn and become ATSC3 certified in one setting.

Partnering with ATSC, we will have the best of instructors and cover the full range of topics that surround NextGen Broadcast. Teaching this at the depth required will take two full days. Because ATSC 3.0 is a collection of technologies and standards, even if one had no interest whatsoever in NextGen itself, the course would appear as a survey course of everything from enhanced audio and video processing, content protection, propagation, modulation, datacasting, and more.

The registration fee of \$199.00 to attend either track includes continental breakfast and a midday refreshment on both days, making this is a great value.



The SBE Ennes Workshop at the NAB Show will include two days of instruction.

Education Almanac

Webinars by SBE

Feb. 16: Testing, Measurement and Monitoring for ATSC 3.0 Broadcasting Systems

sbe.org/webinars

SBE Ennes Workshops

Apr. 14-15: SBE Ennes Workshop at the NAB Show

Contact the SBE to arrange an SBE Ennes Workshop in your area.

sbe.org/ennes_workshop

Leadership Development Course

Aug. 2-4: Atlanta

sbe.org/ldc



Nominations Open for SBE Awards

Each year, the SBE Awards Program recognizes the SBE Engineer of Year, the SBE Educator of the Year and others. It could be someone you nominate. The national award nominations need to be submitted to the National Office by June 15.

There are other honors as well. The SBE Technology Award; Facility Innovation of the Year; Best Technical Article, Book or Program by an SBE Member; Best Article, Paper or Program by a Student Member; and the Freedom Award are among the accolades. There are also a series of statistical awards.

For information about these and any of the SBE National Awards, please visit sbe.org/awards or contact Megan Clappe at mclappe@sbe.org. Recognition by your peers is the highest honor. Honor your colleagues today.





CERTIFICATION UPDATE

By John L. Poray, CAE
Former SBE Executive Director
jlporay@sbe.org

A Tribute to Jim Wulliman

We lost a true giant of the SBE on Nov. 8 when Jim Wulliman passed away at the age of 96. Most of you will recognize his name. Jim was a member of the SBE for more than 50 years, and throughout that time, contributed tremendously to the growth and relevance of the organization and its place within the broadcast industry.

Jim became known as the “Father of SBE Certification,” a distinction well deserved, though he told me many years ago that he was somewhat uncomfortable with that as he was quick to share credit with John Wilner and Ben Wolfe, both influential leaders within the SBE in its early days.

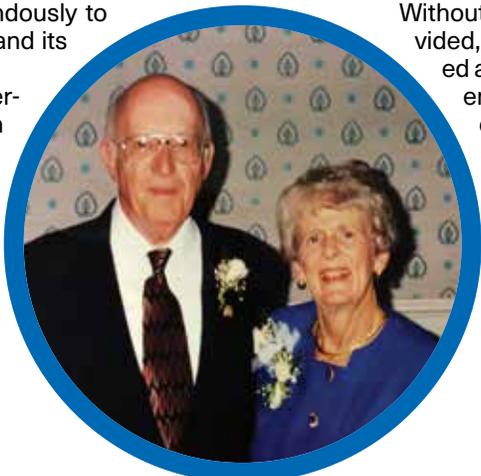
Serious discussion about creating an SBE certification program for broadcast engineers began in the early 1970s. It was not without its detractors, but Jim, John and Ben, working together, were convinced that a privately based program would be beneficial for SBE members (and non-members as well), and in 1975, they convinced the SBE national board of directors to adopt a plan to develop the program. In the months and years that followed, Jim was the one who led the program’s development, which saw its first examinations offered in 1977. Jim became the first SBE Certification Committee chair in 1975 and led that group

for the next 20 years. With the administrative load that the program generated, he also became the first SBE certification director, a role he performed until 1995.

Without the leadership, energy and dedication Jim provided, it’s quite likely the SBE never would have created a certification program. Thousands of broadcast engineers, the vast majority of them members of the SBE, have earned SBE certification over the past 48 years and owe their thanks to Jim. As technology has evolved, the program has grown and adapted to meet the needs of today’s multi-faceted broadcast engineer. Their knowledge level and their careers have been positively impacted by the SBE Certification program that Jim championed.

It was my pleasure and distinct honor to work with Jim in my early years with the SBE. He was honest, thoughtful, intelligent, a wealth of information and a leader in all sense of the word. Jim had a positive impact on countless broadcast engineers, not only because of the certification program, but because of the man he was.

I’ve invited a handful of members who worked with Jim, all leaders in their own right, to share a few of their thoughts about Jim.



Jim Wulliman with his wife Ginny at his SBE retirement party in 1996.

Remembering Jim Wulliman

Jim Bernier, CPBE, CBNE, former SBE Certification Committee Chair

I have many recollections of Jim, but probably the most significant was the plot he and Linda Baun put together to get me on the Certification Committee. It was 1995 and I was happily certified as a CBT and being a chapter chairman in Syracuse. Jim and Linda [Baun] persuaded me to sit for the Certified Senior TV Engineer exam at the NAB Show. I passed, and shortly after that, Jim asked me to join the committee. My first committee meeting was a review of questions for future exams. The meeting went on for hours and, having just come into Las Vegas from the East Coast, I started falling asleep. Jim would gently nudge me to wake me up. Ten years later, I had the privilege of serving as one of Jim’s successors as chairman of the National Certification Committee. Upholding the principles that he established was a pleasure.

Fred Baumgartner, CPBE, ATSC3, CBNT, past SBE national board member, past Trustee of the Ennes Educational Foundation Trust

In 1981, the FCC terminated the first-class license. At an evening “bull session” at the Wisconsin Clinic, I declared, “I didn’t need no stinking SBE certification...”. I had read many of Jim’s articles in *Broadcast Engineering*. His WTMJ was the state’s premier station. I had no expectations of ever meeting, least of all speaking with anyone of that stature. A week later, Jim called. I choked. Jim offered to drive four hours to speak at the Madison SBE meeting. Everyone came. Late that night, after the restaurant cleared, I confessed I was a convert, but I had some issues with the proto-question base. He put out his hand and said, “Don’t complain; help.” That changed everything. Over the years, Jim, long retired, would often send a helpful note supporting SBE education. Jim changed many more career trajectories than just mine. Without any doubt, no one had more to do with the direction of the SBE and its certification and education efforts than Jim. What an amazing life of purpose and service.

Rick Farquhar, CPBE, former SBE President

In my many years of serving the SBE, Jim Wulliman was by my side, guiding and supporting me in my successful years of SBE service. Jim provided new ideas, and a thinking process that made all of us better in our volunteer work. Working with Jim was one of the highlights of my career. I believe Jim is one of the few folks that rises to the very top of his career as a broadcasters “broadcaster.” A broadcaster that I was extremely proud to work with. Thanks Jim, for all you have done.

David Carr, CPBE, 8-VSB, former SBE Certification Committee Chair

I knew Jim for many years and had the honor to follow him as the Certification Chairman. I realized that he left big shoes to fill and I would not be able to come close to filling them. I accepted the position knowing that I would always be able to reach out to him for advice. And that I did. He was always there regardless of the day or time.

Jim also had a great sense of humor. I recall that at one of our SBE meetings in Florida while the board and officers were in meetings, our lovely ladies were out and about enjoying each other’s company over some drinks. Having worked long hours, Jim finally made it to his hotel room where his wife, Ginny, was relaxing. She told him that she had had Sex on the Beach. Jim looked at her and said, “I hope you enjoyed it.” He then went to sleep.



Answer from page 3 The answer is B

False. Immediate on-the-spot inspection is the best way for the FCC to determine licensed compliance. To delay an inspection for the convenience of a licensee would allow the licensee time to modify or restore operating parameters to the licensed requirement, thus permitting the licensee to avoid detection.

SBE Certification Achievements

CONGRATULATIONS



LIFE CERTIFICATION	<p>Certified Audio Engineer (CEA) Gary Faller, Winter Garden, FL - Chapter 42</p> <p>Certified Broadcast Radio Engineer (CBRE) David Halperin, El Paso, TX - Chapter 38</p> <p>Certified Broadcast Television Engineer (CBTE) John Wenzelberger, Henderson, NV - Chapter 128</p> <p>Certified Broadcast Technologist (CBT) David Billeci, San Francisco, CA - Chapter 40 Marshall Deets, Evansville, WI - Chapter 24</p>	<p>Certified Professional Broadcast Engineers and Certified Senior Broadcast Engineers who have maintained SBE certification continuously for 20 years, are at least 59½ years old and are current members of the SBE may be granted Life Certification if so requested. All certified who have retired from regular full-time employment and are at least 59½ years old may be granted Life Certification if they so request. If the request is approved, the person will continue in his/her current level of certification for life.</p>
CERTIFIED PROFESSIONAL BROADCAST ENGINEER (CPBE)	<p>Certified Professional Broadcast Engineer (CPBE) Joseph Ferrara, PE, Titusville, FL - Chapter 42 Bill Soreth, Cockeysville, MD - Chapter 46</p>	<p>Applicants must have 20 years of professional broadcast engineering or related technologies experience in radio and/or television. The candidate must be currently certified on the Certified Senior Broadcast Engineer level.</p>
NOVEMBER EXAMS	<p>Certified Broadcast Television Engineer (CBTE) Wayne Mills, Madison, WI - Chapter 24</p> <p>Certified Broadcast Networking Engineer (CBNE) Robert Matt Gholston, Lafayette, LA - Chapter 72 Andrew Kennedy, Wausau, WI - Chapter 80 Adrian Omari Washington, Riverside, CA - Chapter 131</p>	<p>Certified Broadcast Networking Technologist (CBNT) William Bennett, Belmont, MA - Chapter 11 Aaron Boling, Niles, MI - Chapter 30 Isaiah Chavez, Largo, FL - Chapter 39 Dewayne Irvin, Corvallis, OR - Chapter 76 Andrew Schildberg, Tucson, AZ - Chapter 32</p> <p>Certified Radio Operator (CRO) Michael Beeghley, Brussels, Belgium</p>
SPECIAL PROCTORED EXAMS	<p>Certified Broadcast Television Engineer (CBTE) Tanage Fraser, Bahamas</p> <p>Certified Broadcast Networking Technologist (CBNT) Wiley Norris, Preston, GA - Chapter 5</p>	<p>Alabama Broadcasters Association Certified Broadcast Technologist (CBT) Stephen Erik Etheridge, Albany, GA - Chapter 5 Oliver Gee, Huntsville, AL - Chapter 111</p>
SBE CERTIFIED SCHOOL COURSE COMPLETION	<p>Certified Broadcast Technologist (CBT) <i>DINFOS</i> Jeongheon Bae, Centreville, VA - Chapter 132</p>	<p><i>DINFOS (cont.)</i> Jeremiah Clore, Ft. Meade, MD - Chapter 132 Brenden Sherman, Glen Burnie, MD - Chapter 132</p>
CERTIFIED BY LICENSE	<p>Certified Broadcast Technologist (CBT) Michael Dela Cruz, Quezon City, Philippines</p>	
CERTIFIED RADIO OPERATOR (CRO)	<p>Rich Culbertson, Philo, CA Brady Johnson, Normal, IL Evan Keely, Reston, VA Keith Rozendal, Santa Barbara, CA</p> <p><i>St. Petersburg College</i> Connor Fass, Tampa, FL Ralph Theodore, Brandon, FL Patrick Tobin, St. Petersburg, FL Tayvon Young, Tampa, FL</p>	<p><i>East Valley Institute of Technology</i> Wesley Bowers Bryce Briggs Naomi Calderon Cortes Alexandra Carlson Stephanie Cortez Austin Crawford Rebecca Freeman Bianca Grodecki</p>
CERTIFIED TELEVISION OPERATOR (CTO)	<p>Mary Gilbert, Bedford, TX Paola Gonzalez, Bedford, TX Lisa Payne, Aurora, CO</p>	<p><i>Friendswood High School</i> Caden Cotton Reagan Gukhool Kohen Landrum Sienna Shutts</p>
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.	<p>Certified Professional Broadcast Engineer (CPBE) James Leifer, Boston, MA - Chapter 11</p> <p>Certified Senior Radio Television Engineer (CSRTE) Robert Carroll, Slidell, LA - Chapter 72</p> <p>Certified Broadcast Radio Engineer (CBRE) Pete Tridish, Philadelphia, PA - Chapter 18</p> <p>Certified Broadcast Television Engineer (CBTE) John Kocur, Columbus, IN - Chapter 25</p>	<p>Certified Audio Engineer (CEA) Todd Washburn, Norfolk, VA - Chapter 54</p> <p>Certified Broadcast Technologist (CBT) Maria Dudzak, Ketchikan, AK - Chapter 89 Jeff Konrad, Rock Island, IL - Chapter 65 Michael McCormick, Ogallala, NE - Chapter 87 Tim Parish, Sacramento, CA - Chapter 43 Michael Strobel, Wharton, NJ - Chapter 15 Brian Urban, Georgetown, TX - Chapter 67</p>

Remembering Jim Wulliman

Richard Rudman, CPBE, former SBE President

In 1995, the SBE presented Jim Wulliman with the rarely bestowed Lifetime Achievement award (photo right), an honor that he richly deserved. I first met the SBE's sixth president (1973-75) when I was elected to the Board in the 1980s. Jim continued to serve on the Board long after his term as president. What I remember about Jim from those days was how comparatively little he said at Board meetings. Word-for-word, when he did speak, what Jim said carried a lot of weight in the room. When I was elected president in 1985 and chaired Board meetings, I always positioned myself at the table so I could see Jim. I watched and listened carefully to Jim as discussions and votes proceeded. If a proverbial wind was blowing during a Board meeting, Jim was my personal weathervane. When Jim spoke up, the Board listened. So, I remember Jim for his thoughtful, deliberate, strong, steady voice that helped build the foundation of the SBE that I can still clearly hear in my head.



Remembering Jim Wulliman

Linda Baun, former SBE Certification Director

Jim Wulliman received many accolades in his lifetime. One accolade that he may not have known about affected my life the most. Jim got it. He knew that the broadcast engineer was essential to the industry and the stations that they serve. The technical operation of the station includes the operator to the maintenance engineer, transmitter engineer, and the chief engineer to the vice president of engineering. These individuals are at the forefront of technology and standards that they must be able to explain, and adapt at the station, and often on a very tight timeline. Wulliman got it. Engineers are at the forefront of professional competence, and the industry and engineers needed a way to acknowledge the education, experience, and proficiency of the engineers. Jim recruited the best of the best in the engineering profession to join him in providing recognition of engineers and a benchmark for the industry. The SBE Certification program became that vehicle.

Wulliman knew that with the ever-changing industry, the education and certification of the engineer was one of the best tools to represent the broadcast engineer. His vision and tireless efforts are proven in each certification awarded. He truly was the Father of the Certification Program.

When I became Certification Secretary in 1991, my first meeting with Jim Wulliman changed me. I came from a television background where I had eight bosses. However, Wulliman brought to me a mission that, I have to admit, was daunting. He looked me in the eyes and stated, Linda if you love the certification program as much as I do, we will get along just fine. As I learned



Left to right: SBE Certification Director Megan Clappe, Certification Committee Chair Ralph Hogan, past SBE President and Certification Committee Chair Terry Baun, Linda Baun, Jim Wulliman, Doug Garlinger. From 2019.

from many engineers over the years and experienced for myself the dedication, drive, and delight of engineers overcoming a challenge that took them off the air. I began to understand Jim's commitment. When I became certification director, I never forgot the words of Wulliman to love the program as much as he did. I may have fallen short over the years, but I am proud that Jim Wulliman had faith in me to be my mentor. Thank you, Jim!



1975 SBE Board of Directors. President Jim Wulliman is second from left in the front row. John Wilner is on the right end of the front row.

Chris Imlay, CBT, former SBE General Counsel

By the time I first met Jim Wulliman in 1980, he had already served as president of SBE five years before. He was by that time the chair of the SBE Certification program and had been one of its founding members. What I noted most about Jim initially was how quiet he was in SBE Board and Executive Committee meetings. He never spoke unless he was moved to do so and felt that he had something to contribute to the discussion. And when he did speak, he never really "took the floor." Rather, it was given to him: On those occasions when Jim made a point at an SBE gathering, the room

immediately went quiet so that everyone could hear what Jim had to say. I always thought he earned that degree of deference. And he smiled a lot. His comments and the points he made were never negative; he didn't criticize at all. Rather, he mentioned solutions to problems and ways to minimize the effect of whatever problem he was addressing. I think everyone who knew Jim knew that his self-deprecating delivery and his Midwestern reserve masked a very dynamic, thoughtful man with great ideas, a passion for the broadcast engineering community and a person who, albeit quietly, exhibited real leadership. It was a privilege to have worked with Jim and to have known him.

Doug Garlinger, CPBE, 8-VSB, ATSC3, CBNE, member of the national Certification Committee and past trustee of the Ennes educational Foundation Trust

Jim Wulliman placed me on the SBE Certification Committee in 1991 when I was 39 years old. I was younger than the other members. I don't know what he saw in me. Jim created SBE Certification in 1977. In 1985, the FCC abolished the FCC First Class Radiotelephone License. A lot of broadcasters and broadcast engineers panicked. Jim allowed a holder of an FCC First Class Radiotelephone License to obtain SBE certification without taking the test. Thanks to Jim Wulliman, the SBE Certified Broadcast Engineer became the standard of the industry replacing the FCC First Class Radiotelephone License.

Chuck Kelly, former SBE President

When the FCC abdicated its role to license broadcast engineers, Jim transformed our society and effectively transformed our industry, and he did it with both humility and integrity. His efforts will long outlive him, ensuring that he will not be forgotten.

SBE Compensation Survey Launches in April

On April 1, the SBE will post its seventh survey, and we need your help in gathering and supplying the most accurate information.

As an SBE member, you will have free access to the survey results as a member benefit. The survey will tell you if your earnings are in line with other professionals, based on information gathered from many sources.

The Compensation Survey provides practical information to SBE members about individual compensation (sal-

ary and benefits) based on multiple demographics. SBE members will have access to the full report. We need every SBE member to participate to provide a large sample base of responses. All responses are anonymous. The surveys continue to provide good information, and strong participation ensures that we can provide the most accurate and useful data. In April, look for a link to the survey in our regular email communications and on the SBE website. The results will be published in July.

NAB SHOW, from p. 1

The SBE is also contributing to the Broadcast Engineering and IT Conference sessions again. Tom Mikkelson and Stan Moote are assembling a program to be included within the proceedings. Watch the SBE website and SBE-news for details as they are set.

The highlight for the SBE presence at the convention is the annual SBE Membership Meeting, which will be followed by a reception. The Membership Meeting will be held on Monday, April 17. Watch the SBE website or stop at the SBE booth on-site for the room location. The Membership Meeting provides up-to-date information on all the SBE activities and programs, and it includes a milestone-service recognition of SBE chapter certification chairs, and updates on the society's plans, programs and government relations efforts. Everyone attending will be eligible to win prizes, including gift cards and SBE-logo wear. You'll want to get to the meeting early as well, because the first 100 people in line will receive a special gift. Following the Membership Meeting, join the SBE for a Membership Reception.

The SBE will have an exhibit booth, which is an ideal landmark for meeting with your colleagues. While you're there, talk to your elected SBE leaders and the SBE National Office staff. Stop by every day and drop your



The SBE Membership Meeting is among the planned events at the NAB Show.

card in the daily booth drawing on Sunday, Monday and Tuesday at the convention. A \$200 Amazon gift card will be given away each day.

The SBE Board of Directors will conduct its spring meeting on the morning of April 16. Members are invited to attend as room space allows. The Certification, Education and Frequency Coordination Committees will meet during the convention. There will also be a meeting of SBE frequency coordinators. The SBE plans to offer SBE certification exams on-site as well. Advance registration to take the exam is required.

Attending the NAB Show on a budget? To get a free exhibits-only pass or reduced rate on paid registration, use the registration code SBE23.

A complete SBE event schedule will be posted on the SBE website. There you'll

also find another helpful resource to plan your convention time: our SBE Sustaining Member Online Resource Guide. With these resources, you'll find details for several committee meetings, the board of directors meeting, SBE certification exams, and the daily booth prize drawing.

Include the SBE Sustaining Members in Your NAB Show Exhibit Floor Plans

Make the most of your time on the exhibit floor, and include the SBE Sustaining Members in your booth visits. Our online Sustaining Member Resource Guide lists all the exhibiting SBE Sustaining Members alphabetically and by hall, so you can find them fast.



sbe.org/guide

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LEGAL PERSPECTIVE

By Coe Ramsey, Patrick Cross and Noah Hock
SBE Regulatory Counsels
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Pros and Cons of Tower Registration

As SBE regulatory counsel, many of our daily concerns focus on ensuring that station licensees are meeting the myriad requirements imposed by the FCC and other regulatory bodies with jurisdiction over broadcast activities. As such, our advice may have a tendency to err in favor of disclosing information to those government agencies, both in furtherance of all broadcast licensees' duty of candor and "just to be on the safe side." However, there are also times when reporting or registration may be permitted, rather than required – one such case can arise when determining whether to register an "antenna structure," i.e., a broadcast tower. To be sure, certain broadcast towers *must* be registered. But for towers where registration is not required, tower owners should weigh a number of practical and business factors to determine whether registration is in the owner-licensee's best interest.

The very first consideration for a tower owner is to determine if registration is required. There are a number of situations when broadcast towers *must* be registered with the FCC and listed in the online Antenna Structure Registration (ASR) database. Most notably, registration is required for any tower that exceeds 200 feet AGL (above ground level) at its site, or that is located at or nearby an airport or similar facility (public or private). If you are unsure whether an existing tower must be registered, consult your regulatory counsel.

Benefits of Registration

Even if not required, there are a few reasons why a tower owner may prefer to register. The largest benefit of registration is that the tower is assigned an Antenna Structure Registration Number (ASRN) and becomes searchable in the online ASR database—this can have a few practical uses:

- Ease and accuracy in distinguishing between nearby towers. In situations where multiple towers are located in close proximity to one another, it can be much easier to identify each tower by its assigned ASRN rather than differentiating by location coordinates (which could be very similar for nearby towers).
- Convenience for prospective tower lessees. If a tower owner is actively seeking to lease space on the tower, registration can provide some comfort to potential lessees because many of the tower's details (location, height, etc.) can be verified via the online ASR database. Moreover, some potential lessees may use the ASR database to search for and identify towers within an area when searching for a possible site location.

Issues to Consider Before Registering

There are at least two possible downsides to consider prior to registering a tower: cost, and harmonizing coordinates for licensed devices already on the tower.

Of course, nothing comes free. While the steps necessary to register a tower should not result in colossal expense, there are costs to consider. First, legal counsel may be needed to review and file the required materials. And even if filings are made without the help of a lawyer, a consultant and/or surveyor may be required to verify certain information, conduct an FAA study to assess lighting requirements and other details, or ensure compliance with other requirements such as RF exposure limits.

Also, if a tower is actively hosting one or more licensed devices, the coordinates of each license may need to be "corrected" to match the newly registered tower. As an example, an as yet unregistered tower may host a number of licensed microwaves, relays, etc. Each license connected with that tower will include coordinates, which could have slight discrepancies between them. Registering a tower essentially sets the tower's coordinates in stone, such that going forward the FCC's database will pull coordinate information from the tower's ASR entry for any equipment located on the tower. Accordingly, any coordinate discrepancies in existing licenses associated with that equipment will need to be corrected to be consistent with the tower's coordinates. Depending on the number and accuracy of records for licensed devices currently located on the tower, coordinate (or other necessary) modifications may or may not be a particularly onerous or expensive task. Regardless, licensees and engineers should at least be aware of this potential issue so they are not surprised in the event corrections are needed to remedy inconsistencies in the existing data.

In the end, when the specifics of your tower permit, rather than require, it to be registered, the question whether to register comes down to whether the conveniences of registration outweigh the costs and possible headaches of completing the registration process – considerations that will vary depending on the individual circumstances in each case.

Wishing you each a successful and fulfilling 2023.

These SBE Sustaining Members are Sponsoring Events at the NAB Show

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Additional sponsorships are available.
Contact Debbie Hennessey for information: dhennessey@sbe.org



FOCUS ON THE SBE

By James Ragsdale
SBE Executive Director
jagsdale@sbe.org

Spring Is Getting Busy

2023 is shaping up to be another busy year, with meetings and activities scheduled throughout the year. Here is a look at what is happening this spring.

First, we have an SBE Executive Committee Meeting scheduled in Charlotte, NC, on Feb. 4, 2023. This is a one-day meeting of the SBE officers, two appointed members of the Board of Directors, staff, and regulatory counsel. These meetings are held twice a year, in the summer and winter, and involve consideration of necessary actions on behalf of the board that need to take place prior to the next scheduled meeting of the full Board of Directors.

The next major activity is the completion of the annual audit. The last major step in completing the audit is scheduled for Feb. 6. The audit takes place every year and ensures that the financial records and statements of the SBE are thorough and accurate.

SBE Ennes Workshop @ the NAB Show

We have a new educational activity scheduled for April 14 and 15, beginning the day before the exhibit floor opens at the NAB Show in Las Vegas. It will be the SBE Ennes Workshop at the NAB Show. This workshop will have two tracks, television & radio. Those attending will choose one or the other and be fully focused on their chosen track for both days. The radio track is called RF 101 Boot Camp, and the television track is called NextGen Technical Training.

This workshop will be held at the Westgate Resort and Casino. Registration for the Workshop will be separate from the NAB Show convention registration, and will be available on the SBE website, sbe.org. The \$199 registration fee will include access to the two days of instruction in either the RF 101 or NextGen Broadcast track, and continental breakfast and a midday refreshment on both days. Online registration opened in January.

While so much of a broadcast facility is based on IT infrastructure, RF skills are still a critical need for technicians. The RF 101 track is designed to bring a broadcast engineer with little RF experience to the point where he or she can properly and safely maintain and update the station's transmis-

sion and auxiliary RF services. This course covers AM, FM, TV, STL, RPU and satellites, as well as transmitters, remote control, grounding for lightning, and even a section on AM directional antennas.

For the parallel session, the SBE collaborates with the Advanced Television Systems Committee (ATSC) to provide an in-depth tutorial on the transition to NextGen Broadcasting. This course will take students through the information necessary to effectively participate in the transition, and it serves as preparation for the SBE ATSC3 Specialist Certification. A special SBE Certification exam session will be offered for those holding the prerequisites to take the ATSC3 Certification exam.

The SBE ATSC3 Certification exam opportunity requires a separate registration and application. A link will be included on the SBE Ennes Workshop at the 2023 NAB Show registration page. To be eligible to take an SBE Specialist exam, one must already hold an SBE Broadcast Engineer (CBRE, CBTE,



The SBE is planning a two-day SBE Ennes Workshop at the 2023 NAB Show.

CSRE, CSTE or CPBE) certification and complete the Certification exam registration.

As in years past, the SBE activities at the NAB Show will include daily drawings at the SBE booth, meetings of the Certification Committee, Education Committee, Frequency Coordination Committee, volunteer Frequency Coordinators, the Membership Meeting, Members' Reception, and Certification Exams. If you are able to attend the NAB Show, there will be much to see and do related to the SBE.

Membership Drive

Our annual membership drive runs from March 1 to May 31, 2023, with the theme "The SBE and You – The Perfect Fit." Be-

coming or renewing a membership is a decision that you have to make for yourself. There are many tangible and intangible reasons to become an SBE member. Tangible benefits of your SBE membership include ongoing education and certification. These are benefits that can have a great impact on your career progress. Education happens in both online and in-person educational programs from the SBE National Office and your local chapter. The online library of educational programs are available 24/7/365. With the wide acceptance of virtual educational meetings, many subject matter experts are able to "attend" your local chapter meetings and demonstrate new technologies. The SBE Certification Program provides the opportunity to demonstrate to yourself and to others your knowledge and experience you have acquired over your career, no matter what level of broadcast engineering or operations you work in. Evidence shows that certification usually results in better pay over time.

You also have access to the SBE JobsOnline, if you are looking to see what job opportunities are available that better utilize your expertise. You can filter on geographic location, facility type, and other parameters and be automatically notified by email when a new job is posted that meets your criteria. In addition, you have access to the annual SBE Compensation Survey.

There are many intangible benefits of membership, such as networking with peers locally who have similar interests and email and online forums like the SBE Roundtable, SBE-Chat, SBE Exchange, SBE Facebook group, SBE Chapters Facebook group, LinkedIn network, and Hamnet SBE Chapters of the Air.

I hope that you will be able to participate in many of these upcoming activities. Please let me know if you need any information about activities I have mentioned here. Don't hesitate to email me at jagsdale@sbe.org with any questions.





ENGINEERING PERSPECTIVE

By Vicki W. Kipp, CPBE, ATSC3, CBNT
Closed Caption Manager, PBS Wisconsin
vicki.kipp@pbswisconsin.org

Closed Captioning Broadcast Engineering Videos

Have you ever watched a technical video that is timely, but difficult or impossible to understand? There are plenty of reasons to use closed captioning and not just for the hard-of-hearing community. Perhaps the audio is low or dialog is drowned out; the audio is hissy, overdriven, or cuts in and out; the audio is overpowered by nearby mechanical noises; nearby people or pets – yours or the presenter’s – are being loud; you’re in a quiet space where you can’t play audio aloud; the presenter is clear, but you can’t hear comments from the unmiked audience; you retain written information better than spoken information; you absorb information best when you hear and read information at the same time; you want to cue the video to a specific moment; you only use captions when you’re watching speakers who have an accent or speak a different language e.g., Game of Thrones; or when you’re learning a new language like IP networking, AoIP, A/300, coding, or FCC-ese.

The reality is that closed captions increase engagement. Adding closed captions to a broadcast engineering video can make the difference between that video getting very few views and that video being appreciated and recommended to others.

In addition, adding captions brings secondary benefits. If a transcript of the closed captions is available, you can skim it for relevance before watching and use it in place of taking notes. Search engines index closed captions to use as Search Engine Optimization (SEO) keywords, increasing discoverability.

Social media platforms play videos with the audio turned off by default, making it hard to draw in viewers without captions. If you monetize your social media videos or seek views, user-provided closed captions result in more views (reach) and longer views (completion rate). Search engines and social media give a higher rank and more prominent placement to videos with user-generated captions. This ranking does not apply to auto captioned videos.

Closed captioning, which was developed for people who are deaf or hard of hearing, benefits all of us. Captions will enhance your video’s value. So how can you caption your non-broadcast videos?

Caption Styles

You should first know that there are two caption styles: roll-up and pop-on.

Live stenocaptions and Automatic Speech Recognition (ASR)/Speech-to-Text (STT) AI captions are roll-up style. Roll-up captions have two or three vertical lines that scroll up one line at a time, and the captions lag the live audio. Pop-on captions, meanwhile, are

composed after production ends.

Pop-on captions are displayed as a one- to three-line block. A pop-on caption block is switched out for the next caption block, in sync with the audio.

There are options to auto-caption a video. You can allow YouTube, Facebook, Twitter, Instagram, and TikTok to generate free auto captions. They may not be perfect, but something is better than nothing.

For verbatim captions created by a human (not autocaptions), Rev is an option for bargain captioning and CaptionMax is a choice for broadcast-quality captioning.

DIY Captions

If you want to do it yourself, you’ll first need a transcript. Manually transcribe your video or use ASR transcription. Different platforms use different speech engines, and their accuracy varies. Otter.ai offers limited free auto transcription. Or you could host a meeting on Zoom, screen share your video and audio, turn on Zoom captioning, and harvest the transcript.

YouTube has the easiest auto caption process. Upload a video to YouTube Studio. Set visibility to Private, Unlisted, or Public and select the language spoken. This works if the audio is clear and can take minutes or hours to generate auto captions. If the audio is noisy or has singing, YouTube may not be able to auto caption it.

Once you have the captions, I suggest proofreading everything. If you Google “auto caption fail” you’ll see why. Note: The FCC regulates broadcast captions for accuracy, completeness, positioning, and synchronicity. The agency will issue fines. The Described and Captioned Media Program’s (DCMP) Captioning Key is the gold standard for best practices.

Know that ASR struggles with homophones. When proofing, correct “sound-alike” words. Also, captions should be verbatim and not paraphrased. When possible, take the extra step to describe non-speech sounds. Some examples: [folksy music] [mooring] [1 kHz tone]

You can edit the captions online using YouTube’s Subtitle editor or download a text or captions file to edit them locally. To edit in a word processor, download a transcript without timecode. On YouTube, click on the three dots button under the video to view the transcript. Select “Show transcript.” At the top of the transcript, click on the vertical three dots button to toggle the timecode off. Select the entire transcript, copy, and paste it into a document.

Run spelling and grammar checks. Auto captions struggle to know where sentences begin and end. Revise punctuation and capitalization. Multiple languages, crosstalk, fast talk, or mumbling result in missing words. Auto captions may repeat words or phrases multiple times. Indicate a speaker change by inserting double chevrons (>>). You can also show a speaker change with a dash and a space (-).

For more readable pop-on captions, hit carriage return <CR> at the end of a sentence to start a new caption block. Otherwise, YouTube will display your transcript as word-wrapped roll-up captions. Here’s

see [CAPTIONS](#), p. 14

Internet Closed Captions	SCC “608” Line 21	SRT	DXFP/ TTML/ SMPTE-TT	VTT	SVB/ SUB	ASCII UTF-8 TXT Transcript	Auto Captions	Burned-In Open Captions
YouTube	x	x	x	x	x	x	x	x
Vimeo (*Paid)	x	x	x	x			x*	x
Facebook		x					x	x
Twitter Periscope		x					x	x
Instagram							x	x
TikTok							x	x

Table 1: Various platforms and the closed-caption formats they can accept.

AC Video Solutions • 2014 Andrea Cummis 201-303-1303 Consulting, Systems Design/Integration	Davicom, Division of Comlab, Inc. • 2014 Louis-Charles Cuierrier 418-682-3380 x512 Remote Site Monitoring and Control Systems	LBA Technology Inc. • 2002 Jerry Brown 252-757-0279 x228 AM/MW Antenna Equipment & Systems	Sage Alerting Systems Inc. • 2010 Harold Price 914-872-4069 x113 Emergency Alert Systems Products
American Tower Corporation • 2000 Tiffany Yu 603-930-9091 Development/Construction/Management	Dielectric • 1995 Cory Edwards 207-655-8131 Radio & TV Antenna Systems and Monitoring	Linkup Communications Corporation • 2017 Mark Johnson 703-217-8290 Satellite Technology Solutions	SCMS Inc. • 2000 Bob Cauthen 800-438-6040 Audio and RF Broadcast Equipment Supplier
Barnfind-USA, Inc. • 2021 George Gonos 919-748-7373 Fiber Transport Solutions	Digital Alert Systems, LLC • 2005 Bill Robertson 585-765-1155 Emergency Alert Systems	LYNX Technik • 2007 Steve Russell 661-251-8600 Broadcast Terminal Equipment Manufacturer	Shively Labs • 1996 Dale Ladner 888-SHIVELY FM Antennas & Combiners
Belden Electronic Division • 1991 Rose Lockwood 203-500-4743 Fiber and Copper Cabling Infrastructure	DoubleRadius, Inc. • 2012 Jeffrey Holdenrid 704-927-6085 IP Microwave STL	MaestroVision • 2021 Claude Turcotte 888-424-5505 Broadcast Automation Software	Shure Incorporated • 2012 Bill Ostry 847-600-6282 Microphones, Wireless Systems, Headsets
Birns & Sawyer • 2022 Jim Alcantara 323-466-8211 Systems Integration, Sales, Rentals	Drake Lighting • 2015 Dave Sheppard 270-804-7383 FAA Obstruction Lighting - Medium and High Intensity	Markertek • 2002 Adam June 845-246-2357 Specialized Broadcast & Pro-Audio Supplier	Sierra Automated Systems and Eng. Inc. • 2011 Al Salci 818-840-6749 Routers, Mixers, Consoles, Intercoms
Blackmagic Design • 2012 Terry Frechette 408-954-0500 Production Switchers, Digital Cameras, Routers, Video Editing and Monitoring, Color Correction, Video Converters	DTS Inc./HD Radio Technology • 2014 George Cernat 443-539-4334 HD Radio Technology	Micronet Communications Inc. • 2005 Jeremy Vize 972-422-7200 Coordination Services/Frequency Planning	Staco Energy Products Co. • 2010 Paul Heiligenberg 937-253-1191 x128 Manufacturer of Voltage Regulators, UPS
Bracke Manufacturing LLC • 2012 Patra Largent 949-756-1600 RF & Microwave Components	du Treil, Lundin & Rackley, Inc. • 1985 Jeff Reynolds 941-329-6000 Consulting Engineers	Moseley Associates Inc. • 1977 Bill Gould 805-968-9621 x785 Digital STLs for Radio and Television	SuiteLife Systems • 2019 Nigel Brownnett 310-405-0839 Manage. Monitor. Control
Broadcast Depot • 2018 Tim Jobe 305-281-7540 TV, Satellite, Radio, IP	The Durst Org. - 4 Times Square • 2004 Tom Bow 212-997-5508 TV/FM/Microwave Tower Site	MusicMaster • 2014 Jerry Butler 352-231-8922 Advanced Music Scheduling Solutions	Sutro Tower Inc. • 1989 Raul Velez 415-681-8850 Broadcast Tower Leasing
Broadcast Devices, Inc. • 2015 Robert Tarsio 914-737-5032 Audio/RF Support Products	Econco • 1980 Debbie Storz 800-532-6626, 530-662-7553 New & Rebuilt Transmitting Tubes	Nascar Productions • 2014 Abbey Kielcheski 704-348-7131 Live/Post Production Services	Synthax Inc. • 2020 Brittany Hilton 754-206-4220 Audio Codecs and Converter Solutions
Broadcast Electronics Inc. • 1978 Perry Priestley 217-224-9600 Radio Equipment Manufacturer	ENCO Systems Inc. • 2003 Samantha Bortz 248-827-4440 Playout and Automation Solutions	National Association of Broadcasters • 1981 Industry Trade Association 202-429-5340	Technical Broadcast Solutions, Inc. • 2018 Robert Russell 302-414-0055 Engineering and Consulting Services
Broadcast Software International • 2016 Marie Summers 541-338-8588 Radio Automation, Audio Logging	ERI - Electronics Research • 1990 Zachary Bailey 812-925-6000 Broadcast Antennas, Transmission Line, Filters/Combiners, Towers and Services	National Football League • 1999 Michael Katzenoff 212-450-2368 Game Day Coordination Operations	Televs USA, LLC • 2021 Andy Ruffin 937-475-7255 Antennas Transmitters Measurement Distribution
Broadcast Supply Worldwide • 1986 Shannon Nichols 800-426-8434 Audio Broadcast Equipment Supplier	Floral Systems • 2008 Shawn Maynard 877-774-1058 Television Broadcast Automation	Nautel Inc. • 2002 Jeff Welton 877-662-8835 Radio Broadcast Transmitter Manufacturer	Telos Systems/Omnia/Axia • 2003 John Bisset 216-241-7225 Talk-Show Systems
Broadcasters General Store • 2004 Shane Finch 352-622-7700 Broadcast Audio Video Distributor	Heartland Video Systems, Inc. • 2011 Dennis Klas 920-893-4204 Systems Integrator	Nemal Electronics Int'l Inc. • 2011 Benjamin L. Nemser 305-899-0900 Cables, Connectors, Assemblies and Fiber Optic	Teradek • 2011 Jon Landman 949-743-5783 Camera-top ENG Solutions
Burk Technology • 2019 Matt Leland 978-486-0086 x703 Transmitter Facility Control Systems	Hilights, Inc. • 2016 Timothy Nash 352-564-8830 Obstruction Lighting Maintenance	Neutrik USA, Inc. • 2012 Fred Morgenstern 704-916-0368 Ruggedized Optical Fiber Systems	Tieline The Codec Company • 2003 Dawn Shewemaker or Jacob Daniluck 317-845-8000 Audio Codec Manufacturer
Calrec Audio • 2016 Helen Carr 703-307-1654 Audio Mixing Equipment	Hitachi Kokusai Electric Comark • 2013 Jack McAnulty 413-998-1523 Manufacturer Broadcasting Transmission Equipment	Orban Labs, Inc. • 2011 Mike Pappas 480-403-8300 Audio Processing AMFMTV	Unimar Inc. • 2001 Thad Fink 315-699-4400, 813-943-4322 Tower Obstruction Lighting Designer, Manufacturer, Distributor
Cavell, Mertz & Associates Inc. • 2011 Gary Cavell 703-392-9090 Consulting Services	Indiana Broadcasters Association • 2019 Dave Arland 317-701-0084 Indiana Association for Radio & TV Broadcasters	Potomac Instruments • 1978 Zachary Babendreier 301-696-5550 RF Measurement Equipment Manufacturer	Vizrt Group • 2022 Anne Hrubala 917-771-8330 More Stories. Better Told.
Comrex Corporation • 1997 Chris Crump 978-784-1776 Audio & Video Codecs & Telephone Interfaces	Inovonics Inc. • 2012 Gary Luhrman 831-458-0552 Radio Broadcast Equipment	ProAudio.com- A Crouse-Kimzey Co. • 2008 Mark Bradford 800-433-2105 x560 Proaudio Broadcast Equipment Distributor	Wheatstone • 2010 Jay Tyler 252-638-7000 IP Consoles, Routers & Processors
Continental Electronics • 1976 Dale Dalesio 412-979-3253 TV and Radio Transmitters	Jampro Antennas Inc. • 2011 Alex Perchevitch 916-383-1177 DTV, FM-HD Radio, DVB-T/TT, ISDB-T, DAB	Propagation Systems Inc. - PSI • 2010 Doug Ross 814-472-5540 Quality Broadcast Antenna Systems	WideOrbit • 2012 Brad Young 415-675-6700 Radio Automation and Playout
Crawford Broadcasting Company • 2021 Cris Alexander 303-481-1800 Media Company	Kathrein USA Inc. • 1985 Les Kutasi 541-879-2312 Antennas for Broadcasting & Communications	Quintech Electronics and Communications Inc. • 2002 James Herbstritt 724-349-1412 State-of-the-art RF Hardware Solutions	Wireless Infrastructure Services • 2006 Travis Donahue 951-371-4900 Repacking Services - West Coast Turnkey Services
CueScript • 2014 Michael Accardi 203-763-4030 Teleprompting Software & Hardware	Kintronc Labs, Inc. • 2015 Brad Holly 423-878-3141 Radio Broadcast Antenna Systems - ISO9001 Registered Company	QVC • 2011 Kevin Wainwright 484-701-3431 Multimedia Retailer	
Cumulus Media, Inc. • 2021 Conrad Traumann 212-419-2940 Audio Media Company	latakoo • 2021 Paul Adrian 214-683-0791 Media Workflow Automation	Rohde & Schwarz • 2003 Walt Gumbert 724-693-8171 Transmitters, Test & Measurement, Video	
		Ross Video Ltd. • 2000 Jared Schatz 613-228-0688 Manufacturer, Television Broadcast Equipment	

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Member Spotlight: Catalin Popescu

Member Stats

SBE Member Since: July 29, 2016

SBE Certifications: CPBE

Employer: Microwave Techniques

Position: Technical Sales Engineer/Business Development

Location: Gorham, ME

Chapter: 22 Central New York

I'm Best Known For: RF System Design Solutions

Q. *What do you enjoy or value most about your SBE involvement?*

A. The opportunity to keep pace with the continuously changing broadcasting industry.

Q. *What got you started in broadcast engineering?*

A. Immediately after university graduation, during the "engineer in training" period, I was selected to work for the National Radiocommunication Society, the Romanian national leader in the field of public broadcasting for radio and TV national programs. At that time, my mentor decided that during my training tenure, to professionally season me as an RF broadcasting engineer. My interest in broadcasting grew into a lifetime career.



Catalin relaxes and recharges by being outside, always accompanied by his wife and dog.

Q. *Who was your mentor or who in the industry do you admire?*

A. My mentor, Dr. Lucian Constantinescu, GM of the National Radiocommunication Society opened my eyes to the dynamic broadcasting industry. His mentorship continued over the years and ended back in 1999 when, after a life dedicated to broadcasting, he retired. In 2001 my career brought me to Canada.

Q. *What do you like most about your job?*

A. That's hard, simply just because I love my job and I always enjoy the opportunity to provide RF systems solutions to complicated and challenging requests.

Q. *When I'm not working I...*

A. ... relax and recharge in nature, either hiking or taking long beach walks, always accompanied by my wife and my dog. Sunsets or sunrises, mountains or beaches, summer or winter, living in Maine is "The way life should be." (Maine's state slogan)

Q. *What's something people don't know about you?*

A. In the 1990s I was the National Radiocommunication Society representative and active in the task force the EBU created to develop and implement the DVBT standard, the foundation of ATSC 3.0. Also, on 9/11, as Larcan's representative, I provided RF systems support for WWOR, WNET, Fox, and WNBC. My projects on the Empire State Building created a new broadcasting center for the NYC area in the aftermath of the events.

Nominate a Member for SBE Fellow

There is still time to recognize a broadcasting peer who has contributed to the success of an SBE chapter or broadcasting. The membership grade of SBE Fellow is the highest in the society, and it honors those who have exhibited a dedication to the advancement of the broadcast engineer, the field of broadcast engineering and the Society of Broadcast Engineers itself. To date, 88 members have been recognized with the honor in the society's more than 55 years of existence.

To nominate a member, candidates must be proposed in writing by a voting SBE member to the Fellowship Committee. The nomination must include a comprehensive professional history of the nominee and an explanation of why the candidate is deserving of this honor. The nomination must also include the written endorsements of at least five other voting SBE members. Nominations are confidential. No others besides the nominators and the members of the Fellowship Committee should be aware of the nomination. The nominee should not know that he or she has been nominated.

Nominations for 2023 must be received no later than March 17, 2023, for consideration. The Fellowship Committee will bring the names of nominees to the Board of Directors for consideration and election at the April 2023 meeting. The SBE secretary will notify those elected. Recipients will be recognized at the SBE Awards Dinner in the fall during the 2023 SBE National Meeting.

Submit your nominations in a single package to: Fellowship Committee Chair Troy Pennington, CSRE, CBNT; 6156 Hampton Hall Way; Hermitage, TN 37076; or to tpennington@sbe.org.

CAPTIONS, from p. 14

an example from an SBE WEBxtra:

```
♪ ♪ <CR>
>> Chriss Scherer: Good afternoon. <CR>
>> Kirk Harnack: Hi, Chriss. <CR>
Our guest is Andrea Cummis. <CR>
>> Andrea Cummis: Hi. <CR>
```

When you are finished editing, save the transcript as a plain text UTF-8 file to remove incompatible characters. Upload the text file to YouTube subtitles. YouTube syncs your transcript with the audio, timestamping individual caption blocks. Once complete, tweak YouTube's timing if needed. Click Publish.

If you download a caption file, you can edit it with free software such as Nikse.dk Subtitle Edit, NCAM CADET, or paid software including Synchrimedia MovieCaptioner, Adobe Premiere Pro, Telestream CaptionMaker, EZ Titles.

Subtitle Edit (SE) imports/exports most caption formats and plain text transcripts. Build a dictionary to replace oft-misspelled words with SE's Multiple Replace. Some possible additions: six-pack=fixed path; iPod/pause=IPAWS; Nasdaq=DASDEC. Upload the corrected caption file to YouTube to replace auto captions.

Caption File Formats

While broadcast caption files are embedded in the video, Internet captions are sidecar files that get uploaded after the video. IP platforms use many caption formats. The hexadecimal SCC Line 21 caption format carries a timed transcript with formatting and positioning. DXFP, SRT, SVB, and VTT captions are human-readable.

Take the time to make your videos accessible, discoverable, and free of awkward auto-caption fails.

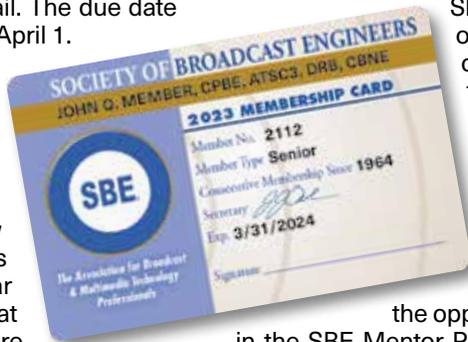
Keep Your SBE Member Benefits and Renew Your Membership Now

Communication and developing professional relationships are important to your career. By maintaining your SBE membership you can do both. Annual membership renewal for Member, Associate, Senior, Student and most Fellow members of the SBE is underway. Renewal letters and membership cards are in the mail. The due date for membership renewal is April 1.

Membership dues for the SBE MemberPlus option remains at \$175 and includes all of the benefits of traditional membership, plus access to all archived SBE webinars and any new webinars the SBE presents during the membership year (through March 31, 2024), at no extra charge. That's more than 100 technical broadcast and media webinars available to you 24/7/365.

Traditional membership dues for Member, Senior, Associate and Fellow members remain at \$85. Student membership stays at \$25. SBE Student Members may choose to take the SBE Student MemberPlus option

for \$90 when they join or renew. Traditional SBE membership provides discounted education, certification programs and member services as well as opportunities for member interaction in local chapters and with members across the United States and in 19 other countries. The SBE network of 115



SBE chapters provides opportunities for education, local SBE certification exams and professional and social interaction with local technical media professionals. Traditional membership also affords members

the opportunity to take part in the SBE Mentor Program, and access to the annual SBE Compensation Survey results, SBE social media and the SBE WEBxtra monthly online meeting.

The fastest way to renew your membership is online at sbe.org. Click on "Renew Membership" at the top of the home page. The online system is secure and accepts Visa, MasterCard and American Express.

Your membership can also be renewed through the mail, using the renewal form and return envelope mailed to you.

While the SBE By-laws allow for a grace period if dues are not paid by April 1, SBE MemberPlus benefits expire April 1 if not renewed. Membership will revert to traditional membership during the grace period.

SBE Life Members (who traditionally pay no dues) have the opportunity to take the SBE Life MemberPlus option and receive access to all Webinars by SBE for \$90. To sign-up for SBE Life MemberPlus, contact Scott Jones at the National Office at 317-846-9000 or kjones@sbe.org.

SBE members who are at least 65 years of age, are fully retired from broadcast engineering work and have been an SBE member for at least 15 consecutive years at the time of applying for Life member status may be eligible for Life membership. There is a one-time \$85 application fee (\$175 if opting for Life MemberPlus). Life MemberPlus is renewed annually.

If you have questions about your membership renewal, please contact Scott Jones at the SBE National Office at 317-846-9000 or kjones@sbe.org.

WELCOME TO THE SBE

NEW MEMBERS

Robb A. Albritton - Chandler, AZ
Jeongheon Bae - Centreville, VA
Patrick J. Barkley - Portsmouth, VA
David A. Buck - Quincy, IL
Steven A. Carter - Hope, RI
John A. Chisholm - Tuscaloosa, AL
Christian GH Cripe - Twin Falls, ID
John F. Ellingson - Saint Augustine, FL
Cameron M. Ford - Davenport, IA
Oliver J. Gee - Tuscaloosa, AL
Cody Gelsinger - Boston, MA
Daniel Guchie - Seattle, WA
Tom Guidry - San Diego, CA
David Hertel - West Jordan, UT
Saxon L. Holbrook - Clinton, MT
Shelia D. James - Montgomery, AL
Charles W. Kerman - Cranford, NJ
Dustin Kirk - Tupelo, MS
Sean P. Koning - Ijamsville, MD
William M. Laziza - Brooklyn, NY
K.J. LeGrand - Philadelphia, PA
Brendan L. Marsden - Terrell, TX
Michael McNeil - Bosque Farms, NM
James P. Morris - Sun Valley, CA
Reginald Osterhoudt IV - Clintondale, NY
Dylan Paschall - Sarasota, FL
Tibor Shelley - Colledale, TN
Kyle Steenveld - Western Springs, IL
Jordan Thomas - St. Johns, NL
John F. Walker - Burlington, VT
Jasmine Washington - Los Angeles, CA
Jake A. Williams - Missoula, MT
Ryan Wilson - Shelburne, VT
Matt A. Woodard - Dothan, AL

NEW STUDENT MEMBERS

Jeremiah C. Clore - Ft. Meade, MD
Brenden A. Sherman - Glen Burnie, MD

NEW ASSOCIATE MEMBERS

Peter F. Tanz - Green Bay, WI

RETURNING MEMBERS

Benjamin J. Aubin - Holland, MI
Paulo FS Azevedo - Uberlandia, MG, Brazil
Jigar Bhakta - Temple, TX
Michael F. Budronis - Clearwater, FL
Robert T. Carroll - Slidell, LA
Jeff Couch - Moore, OK
Michael P. Doenges - Rutland, VT
Manuel A. Ferreira - Livingston, NJ
Beau M. Foster - Greensboro, NC
Robert C. Grace - Duluth, MN
Kurt J. Hanson - Fairfield, CT
John B. Hewett - Woodruff, SC
Tina K. Hill-Cannon - Grand Rapids, MI
Clay Johnson - Panama City Beach, FL
Alvaro A. Montealegre - Tampa, FL
James E. Mueller - Des Moines, IA
Eugene Negron - Omaha, NE
David M. Skalish - Glenolden, PA
Jeffrey A. VanSyckle - Sparta, MI

In Memorium

Christopher Cain - Stoughton, WI
Richard Kane - Little Falls, NY
Gary Kline - Atlanta, GA
Daniel Paixao - Meridian, ID
Thomas Smith - Sun Prairie, WI

Host an SBE Ennes Workshop

ENNES WORKSHOP

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sbe.org/ennes_workshop

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