

# THE Signal

Bimonthly Publication of the  
Society of Broadcast Engineers

60 YEARS  
SBE  
SINCE 1964

The Association for  
Broadcast and  
Multimedia Professionals

Special Section Inside: Emergency Preparedness

[www.sbe.org](http://www.sbe.org)

Volume 37, Issue 2 • April 2024

## SBE Active at the NAB Show

It's a common thought: Is it already time for the NAB Show? Yes, it is. The annual convention is packed with exhibits, sessions and plenty of opportunities to meet with manufacturers, vendors and colleagues. As you plan to make the best use of your time at the convention, include the many SBE events on your convention calendar. While the SBE Ennes Workshop highlights the SBE's educational offering on Friday and Saturday, the main event for SBE members is the annual Membership Meeting, which will be followed by the Member Reception.

All the SBE events will be in the West hall this year. The SBE Ennes Workshop will be held in rooms W219 and W225. Unlike previous year, the SBE booth is on the exhibit floor of the West Hall, booth W4112.

The Membership Meeting will be held on Monday, April 15, at 5:00 p.m. in LVCC room W220/221. The Membership Meeting brings you up to date 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 two Blackmagic Design Micro Camera 4K G2s. Two will be awarded, courtesy of Membership Meeting sponsor Blackmagic Design. In addition, restaurant gift cards and SBE-logoed items will be awarded. You'll want to get to the meeting early as well, because the first 125 people in attendance will receive a commemorative SBE 60<sup>th</sup> anniversary poker chip.



The Membership Reception starts after the Membership Meeting at 6:15 p.m. in room W213. Light snacks and drinks are made possible from the generous support of several SBE Sustaining Member sponsors. Lots of prizes will also be awarded, including gift cards, broadcast equipment and more. Check the list of event sponsors on page 15 of this issue.

The SBE booth is W4132, which is in the north end of the West Hall near the registration desk. Be sure to check the complete event schedule on the SBE NAB Show events page on our website ([sbe.org/nabshow](http://sbe.org/nabshow)), which is also linked from the home page.

Another helpful resource to plan your convention time is our SBE Sustaining Member Online Resource Guide ([sbe.org/guide](http://sbe.org/guide)). All these sources provide details for SBE committee meetings, the board of directors meeting, SBE certification exams, and the daily booth prize drawing.

## Grow the SBE During the Membership Drive

The annual Society of Broadcast Engineers membership drive is underway. The drive is an effort to recruit new members to the society, and you can benefit from



your recruiting efforts as you help the Society grow.

When you recruit a new member during the Member Drive, you will be entered into the drawing for prizes donated from our Sustaining Members and the SBE. If you recruit a new Sustaining Member, you'll earn five entries into the prize drawing. And if you recruit three or more Regular or Associate

Members or one Sustaining Member you will also receive an upgrade to SBE MemberPlus.

You already know the benefits of being part of the society, so share it with your colleagues. Need a complete list? Go to [sbe.org/SBEreasons](http://sbe.org/SBEreasons). Recruit someone now through May 31 to be eligible to win a prize. The grand prize is airfare and hotel to attend the SBE National Meeting, to be held during the 2024 WBA Midwest Regional Broadcaster's Clinic in Madison, WI, in September.

As a further bonus, for every new member you sponsor you will receive \$5 off your 2025 dues (up to \$25).

SBE Sustaining Members who have contributed prizes are noted on page 4. We thank these SBE Sustaining Members for their support. Start recruiting now, and make

sure your recruits list your name on their SBE membership applications so you get the credit. Full details about the Membership Drive are at [sbe.org/drive](http://sbe.org/drive).

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317-846-9000 [www.sbe.org](http://www.sbe.org)

# Nominations Committee Seeks Board Candidates

By Jeff Welton, CBRE

The SBE Nominations Committee is beginning its work to assemble a slate of candidates for the upcoming SBE election. I have again been appointed to chair the Nominations Committee.

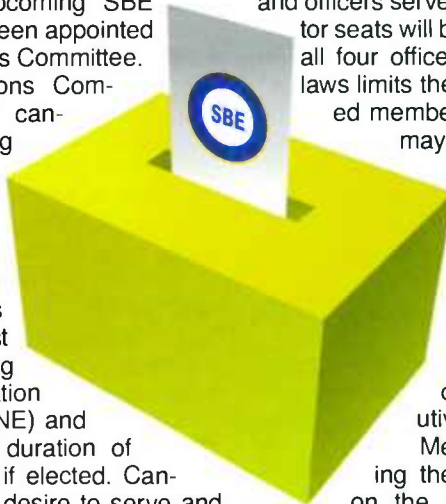
The SBE Nominations Committee seeks qualified candidates who are voting members (Member, Senior, Fellow or the designated representative of a SBE Sustaining Member) in good standing (dues paid). Candidates must hold an engineering level of SBE certification (CBT or higher, or CBNE) and maintain it the entire duration of service on the Board, if elected. Candidates should have a desire to serve and lead, not only as a member of the board, but through service as a national committee chair or member. Members of the Board are "at large," meaning they represent all members, not any one specific region, state, city or chapter.

Members of the Board are expected to attend two 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 2024 as will all four officer positions. The SBE By-laws limits the number of terms of elected members of the Board. Directors may serve three consecutive terms, the secretary and treasurer may serve up to four consecutive terms, and the president and vice president may serve up to two consecutive terms. The maximum time anyone may serve on the board is ten consecutive years.

Members interested in offering their candidacy and serving on the national Board if elected are encouraged to contact the SBE Nominations Committee Chair Jeff Welton, at [jwelton@sbe.org](mailto:jwelton@sbe.org) or via the SBE National Office at 317-846-9000. A slate of nominees will be assembled by the committee by April 9. Other qualified members may be nominated by members in good standing no later than June 23.

The election takes place from July 8 through Aug. 7. Those elected will be installed into office during the SBE National Meeting, to be held in Madison, WI, in September.



# Participate in the 2024 SBE Compensation Survey

The SBE is conducting its ninth (and ongoing) compensation survey. Launched to provide practical information to SBE members about individual compensation (salary and benefits) based on facilities, market size and years of experience, SBE members will have access to the full report.

While each annual survey has seen a successful response rate, your participation is important to provide the large sample pool for the most reliable results.

All survey responses are anonymous. Find the survey link in email communications and on the SBE website. With your help we can provide a useful and practical resource to SBE members.

Highlights of the survey will be reported in *The Signal*. The full report will be available for download to members from the SBE website. Take the survey today.



Certification Question



**SBE CERTIFIED**

Answer on page 6

A NOR gate output is connected to both inputs of a NAND gate. The NAND gate output is connected to the input of an inverter. The simplified circuit is:

- A. NAND gate
- B. OR gate
- C. NOR gate
- D. AND gate





## LETTER FROM THE PRESIDENT

By Ted Hand, CPBE, 8-VSB, AMD, ATSC3, DRB  
SBE President  
president@sbe.org

### Its April, It Must Be NAB Show Time

Hello from Charlotte, NC. In the past few months, many of us have been getting hotel and flight reservations to head west (for me) for the annual get together called the NAB Show, from the National Association of Broadcasters. This will be my 39<sup>th</sup> NAB Show. My first convention, I stayed at the MGM Grand Hotel, which later became Bally's, which is now the Horseshoe. It was pre-monorail days, and 100 or so buses were brought in from all over the southwest United States.

Getting to the convention hall wasn't too bad. People arrived at different times. Going back to your hotel was a different story because everybody left at 6 p.m. Herding people onto the buses looked like the Fort Worth cattle yard, but you would always

If you're attending the convention, I hope you will register for the SBE Ennes Workshop on April 12 and 13. The SBE is providing two workshops as part of the NAB program: RF101 Bootcamp, headed by Jeff Welton, and Media Over IP (MoIP) Essentials, organized by Fred Willard and David Bialik. Ennes Workshops are always informative and full of excellent information for your mental toolbox. It is good to be working with the NAB on these programs.

While you attend the show, please stop by the SBE booth. We are located at W4132 in the West Hall. We have a large selection of SBE shirts, hats, and other items. The booth will have SBE staff members available to offer assistance, along with officers and board members to answer your questions, or just stop in to say, "Hi!"

The SBE will also have its spring Board of Directors meeting on Saturday evening in the West Hall. All SBE members are welcome and encouraged to attend. The SBE – along with our good friends at IEEE/BTS and SMPTE – are again hosting an Ice Cream & Beer social this year on April 16. Check the SBE booth for time and location.

#### Preparing for a Change

In a few months, I will retire from my work at CMG-Charlotte, where I have worked for the past 18 years. I have been in broadcasting for 47 years, and an SBE member for 43 of those years. I started in radio, then later moved to television. I obtained my first real job in television because



Shively exhibits at the NAB convention in 1983.

I was an SBE member and attended the monthly SBE meetings in Hampton Roads, VA. At these meetings, I met people who helped me along. Without the SBE, I would not have had that connection.

My life right now is full of Social Security, Medicare and retirement pension forms, and I'm frequently asked, "What are you going to do now?" Well for starters, I have decided to run for a second term as your SBE president. I originally had mixed feelings about it. I used to think the president should be a working engineer and not a retired person doing it. But my health is still good. I really enjoy the work as president. (I haven't seen any pitchforks or torches by my window, so I guess I'm doing an ok job, so far!) Several others have told me being retired is no issue. So, my name will be on the ballot.

Speaking of retirement, remember if you have retired, or are getting close to retirement, you can apply for Life Membership in SBE. You must be retired, 65 or older, and have been a member for at least 15 or more consecutive years. Contact the SBE National Office for complete details.

As far as SBE business, we had the winter Executive Committee meeting in Charlotte on January 19. There are some proposed by-laws changes coming out of the meeting, and we decided the 2024 SBE National meeting will be held in Madison, WI, on Sept. 10-11, 2024. We are also continuing to stay ahead on spectrum matters with the FCC.

If you need information or have questions, please contact the SBE National Office in Indianapolis at 317-846-9000. The staff is ready to help you with any SBE question or request. You can contact me at: president@sbe.org with comments, corrections or just say, "Hi!"



The old MGM Grand Hotel, as it looked at Ted's first NAB Convention.

make a new friend and have good conversation waiting in line. The basketball arena was in the North Hall. Vendors used to give away hats, shirts, and stuffed animals. Now pens, bite-size candy, and lip balm are the order of the day.

### SBE Membership Drive Prizes for Recruiters

#### Donated by Sustaining Members

- **Davicom:** \$50 Amazon gift card
- **Heartland Video Systems:** \$100 Amazon gift card; lots of swag including a Yeti insulated tumbler, drinking glasses, a Rocketbook notebook and more
- **Orban:** Optimod-PCn 1600 with Nielsen license
- **Telos:** Two Telos swag bags

#### From the SBE

- A copy of SBE CertPreview
- One free SBE Webinars by SBE registration
- One \$25 gift certificate for the SBE Store/SBE Bookstore
- An SBE-logoed hat
- Two SBE coffee mugs and magnets
- Books from the SBE Bookstore







## EDUCATION UPDATE

By Greg Buchwald  
Distinguished Member of the Technical Staff, Motorola Solutions  
gbuchwald@sbe.org

# The Folded Unipole AM Antenna: Part 1 Unpacking Theory and Practice

To some, the folded unipole represents magic. Unfortunately, it is often misunderstood in theoretical terms and in practice. I have heard people describe it as a folded dipole. They have stated that only the portion of the antenna below the cage is “active,” and that lightning protection is no longer required when a tower is converted to a folded unipole design. All are blatantly false. In this first installment of a two-part series, we will explore the basics of the folded unipole antenna.

The folded unipole is constructed by building a cage-like outrigger from the tower legs; generally offset from the legs by a foot or two. The cage generally consists of insulated outriggers that stand off horizontally from the tower itself. Cables are then strung from the highest outrigger to a point usually 6 to 10 feet above the ground where another insulator is inserted into each leg and some form of tensioning, usually a turnbuckle, is used to slightly tension the cables so they remain vertical against the face of the tower and stable with wind. Finally, a cage is formed using additional cable at just above the bottom insulators as well as at the point where the cables are connected to the tower at some point vertically along the tower above ground. The base insulator, if one is in place, is strapped across to effectively ground the tower itself. Figure 1 depicts the simplified model of a four-legged tower converted to a folded unipole feed system.

Since the tower is now at DC ground potential, and a new feed point is created at the bottom of the newly-formed cage, other RF and conductive power/control cables can be readily run up the tower itself without the need for isocouplers or RF chokes such as those used for lighting. In addition, the now-DC grounded tower will not build static charge as an insulated tower would normally be prone to. This does not mean that lightning protection is no longer needed!

A base-insulated AM tower is referred to as a series-fed tower. The excitation point is located just above the base insulator and the tower is not at DC potential until a static drain choke, usually present in the antenna matching unit (ATU), provides the ground path. An alternative to the series-fed tower is the shunt-fed tower. In the latter, the tower base is at ground, no insulator is present, and a slant wire is utilized to feed the tower at a predetermined height above ground. The classic shunt-fed tower has the advantage of being DC grounded, and it requires no base insulator. Figure 2 depicts the model of a classic slantwire-fed grounded vertical antenna. The disadvantage is that the feedpoint resistive component is often low, requiring a step-up to 50 ohms that is often undertaken using a high Q network resulting in sideband impedance issues. This can lead to on-air audio degradation, tendencies towards component failure including transmitter issues, and other degradation. Furthermore, the

slant-wire feed has an RF current imposed upon it that can cause a slight directional effect in the azimuth pattern of the radiator. This effect is generally on the order of 0.5 to 1dB. The directional effect is illustrated in Figure 3. A folded unipole design all but eliminates the directionality inherent in a single-wire, slant-wire shunt fed system.

The folded unipole is given its name because of the appearance of the cage around the tower. Some, therefore, conclude that it is akin to a folded dipole, often used in the amateur radio community. A folded dipole is symmetric about the feedpoint and the folded element acts as a transformer to step up the feedpoint impedance by a factor of 4. The vertical folded unipole antenna differs in several respects: The folded element comprises only the portion of the antenna above ground and seldom utilizes the entire tower structure within the cage. The ground system, usually composed of 120 radials extending from the tower in buried form, comprises the remaining radiating system. If

this is not a form of a folded dipole system, what is it? The answer is actually simple: It is a symmetric form of a shunt fed vertical monopole radiator. By placing shunt feed elements symmetrically along

each leg of the tower, several advantages take place: The azimuthal radiation pattern is essentially omnidirectional and the cage generally also acts to raise the drivepoint resistive component. The latter can reduce losses due to resistive heating slightly and generally allows a lower Q matching network to be utilized.

As stated earlier, the cage seldom encompasses the entire height of the tower. In fact, proper engineering of a folded unipole system should begin with modeling of the tower system. A cage is then modeled and an acceptable upper cage and attachment point for connection to the tower is determined.

While we have described the folded unipole, in the next installment,

see [UNIPOLE](#), p. 6

Figure 1. Wire model of the Folded Unipole Vertical Antenna

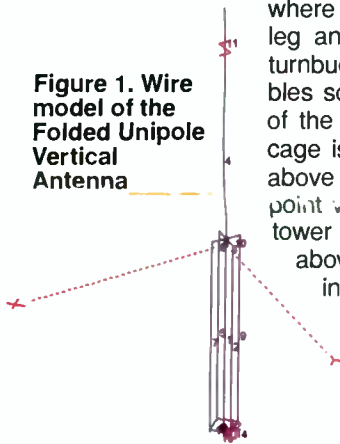
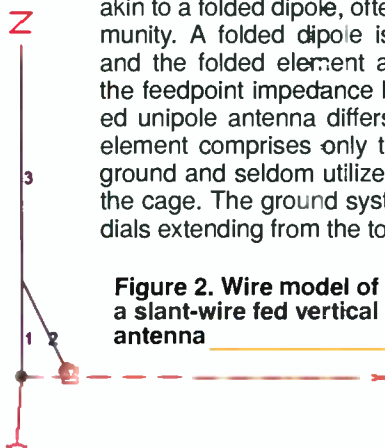


Figure 2. Wire model of a slant-wire fed vertical antenna



## Education Almanac

### Webinars by SBE

April 25: 2024 SBE RF Safety Course  
May 9: LTE Interference

[sbe.org/webinars](https://sbe.org/webinars)

### Leadership Development Course

Aug. 7-9: Atlanta

[sbe.org/ldc](https://sbe.org/ldc)

### SBE Ennes Workshops

May 22-23: Chesapeake Bay, MD  
June 8: Syracuse, NY  
June 19: Quincy, IL

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

[sbe.org/ennes\\_workshop](https://sbe.org/ennes_workshop)



For more information on any SBE education program click the Education tab at [sbe.org](https://sbe.org), or contact Education Director Cathy Orosz at the SBE National Office at 317-846-9000 or [corosz@sbe.org](mailto:corosz@sbe.org).





# CERTIFICATION UPDATE

By Megan E. Clappe  
SBE Certification Director  
mclappe@sbe.org

## Recognizing Volunteer Service

The SBE is made up of a multitude of volunteers. While there are six employees who work at the National Office, the real momentum of the SBE is because of those who dedicate their personal time to further the goals and objectives of broadcast engineering through the SBE. This includes, but is not limited to, the Board of Directors, all the various SBE committees in addition to the Certification Committee, and the local chapters including the chapter certification chairs.

Every year at the annual Membership Meeting during the NAB Show, the SBE recognizes the local certification chairs who devote volunteer time to the Program of Certification. These local certification chairs receive a plaque on the recurring five-year anniversaries. What follows is a list of those who will be recognized in April.

Thank you very much to all the volunteers who devote so many hours to the SBE and the certification program!

### Diamond Project Recertification

Did you let your SBE Certification lapse? Each Certification is valid for five years. You can recertify at the same level by earning points, or you can advance to a higher level of Certification. If you let your Certification lapse, you have a unique chance to get it back.

As the SBE celebrates 60 years, the SBE is offering an opportunity to regain your SBE Certification without taking a Certification exam. All the program details and a special Diamond Project application are on the SBE website at [sbe.org/diamondproject](http://sbe.org/diamondproject). Complete the Diamond Application and provide a letter to the Certification Committee detailing the work you have been doing over the time since your certification expired. A resume is also helpful.

All SBE Certification levels are included in the Diamond Project. The fee varies on member status and Certification level. Take advantage of this special opportunity and get your SBE Certification back.

### Track Your Recertification Points

When a Certification is due at the end of the five-year period, you can renew that certification by submitting a recertification application, the supporting documentation of earned points, and the appropriate fee. Full details are online at [sbe.org/recertification](http://sbe.org/recertification).

How you track your points is up to you, but the SBE has ways to help. You can download a fillable PDF, you can download an Excel file, or you can track your points on the SBE website in the SBE Member Directory. To track them online, search for yourself in the Member Search, click your name, and follow the links to enter your information. There's also a link to list and copy your information when you need it.

### Chapter Certification Chairs

George M. Kowal, CSRE, CSTE, CBNT; Chapter 15



5 YEARS  
Timothy J. Wright, CPBE; Chapter 26  
Douglas P. Irwin, CPBE, AMD, DRB; Chapter 47  
Joseph M. Davis, CPBE; Chapter 54  
Keaton A. Scovel, CBRE; Chapter 109

Charles "Buc" Fitch, CPBE, AMD; Chapter 14  
Michael Graziano, CEV, CBT; Chapter 14  
Kishore V. Persaud, CPBE, CBNT; Chapter 46  
David W. Davis, CPBE, CBNT; Chapter 67



15 YEARS  
Gary L. Stigall, CPBE; Chapter 36  
Thomas P. Lowther, CPBE, CBNT; Chapter 145

Chris J. Heck, CPBE; Chapter 76



25 YEARS  
Frank Maynard, CPBE; Chapter 82

### UNIPOLE, from p. 5

we will discuss the choice of cage height, proper and intelligent impedance matching of the system, and the benefits of the folded unipole antenna system. I would like to thank Roy Lewallan, K7EL, for his granted permission to utilize the publicly-available EZNEC Pro software for the modeling of the antenna system discussed in both parts of this article. This program is available online, free of charge. While I generally use other simulation software to design and model AM radiating and directional systems, it was felt that the use of EZNEC would allow simple duplication of the work presented herein.

Part 2 of this article will appear in the June issue of The Signal.

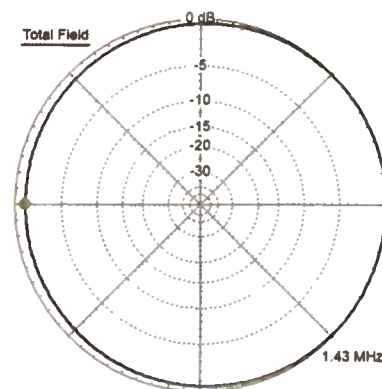


Figure 3. Resultant directionality of a slant-wire feed system

Azimuth Plot  
Elevation Angle 0.0 deg  
Outer Rng 5.64 dB  
Cursor Az 180.0 deg  
Gain 4.61 dB  
-1.03 dBmax  
Slice Max Gain 5.64 dB @ Az Angle = 1.0 deg  
Front/Back 1.03 dB  
Beamwidth ?  
Sidelobe Gain < -100 dB  
Front/Sidelobe > 100 dB

**Answer from page 3**

The described circuit: The answer is C

NOR      NAND      Inverter

A two-input NAND gate with the same signal applied to both inputs is logically equivalent to an inverter. It can only see inputs that are both high or both low, so only two states from the NAND truth table are possible. Two inverters in series cancel each other out, becoming a logic buffer. That leaves the function of the NOR gate standing on its own.

NAND Truth Table		
In	In	Out
0	0	1
1	0	1
0	1	1
1	1	0



# SBE Certification Achievements

## CONGRATULATIONS



### LIFE CERTIFICATION

Certified Professional Broadcast Engineer (CPBE)  
Kevin Johnson, Hoffman Estates, IL - Chapter 26

Certified Professional Broadcast Engineer (CPBE)  
8-VSB Specialist (8-VSB)  
Charles Stutsman, Norfolk, VA - Chapter 54

Certified Professional Broadcast Engineer (CPBE)  
AM Directional Specialist (AMD)  
William Harris, Albuquerque, NM - Chapter 34

Certified Broadcast Networking Engineer (CBNE)  
Charles Stutsman, Norfolk, VA - Chapter 54

Certified Broadcast Television Engineer (CBTE)  
Mark Seekins, Columbus, OH - Chapter 52

Certified Broadcast Technologist (CBT)  
Ed Best, Durham, NC - Chapter 93

Certified Radio Operator (CRO)  
Ed Best, Durham, NC - Chapter 93

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.

### CERTIFIED PROFESSIONAL BROADCAST ENGINEER (CPBE)

Jeremy Preece, Rocklin, CA - Chapter 43

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.

### NOVEMBER EXAMS

Certified Senior Television Engineer (CSTE)  
Jorge Quinones, Kissimmee, FL - Chapter 42

Certified Senior Radio Engineer (CSRE)  
Jeremy Preece, Rocklin, CA - Chapter 43

Certified Broadcast Technologist (CBT)  
Tyler Swenson, Hot Springs, MT - Chapter 6

Certified Broadcast Television Engineer (CBTE)  
Drew Horigan, Huntsville, AL - Chapter 111

Gabriel Spears, Lake Mary, FL - Chapter 42

Certified Broadcast Networking Technologist (CBNT)  
Raymond Wilke, Abruus, MD - Chapter 46

Certified Broadcast Networking Engineer (CBNE)  
Drew Horigan, Huntsville, AL - Chapter 111

Paul Jonak, Moreno Valley, CA - Chapter 131

Maxwell Sidell, Yonkers, NY - Chapter 15

Certified Radio Operator (CRO)  
Jeremy Menard, Ithaca, NY - Chapter 140

### FEBRUARY EXAMS

Certified Broadcast Radio Engineer (CBRE)  
Brett Gibson, Suring, WI - Chapter 80

Certified Broadcast Television Engineer (CBTE)  
Seamus Butcher, Somerville, MA - Chapter 11

Christian Hoyer, Madison, WI - Chapter 24

Michael Kurras, Lafayette, CO - Chapter 48

Certified Broadcast Technologist (CBT)  
Maximilian Vokoun, Gilbert, AZ - Chapter 9

Certified Broadcast Networking Engineer (CBNE)  
John Dowdel, Westminster, CO - Chapter 48

Philip Hartman, Dunedin, FL - Chapter 39

Raymond Mayberry, Richmond, VA - Chapter 60

Dan Merwin, Denver, CO - Chapter 48

Certified Television Operator (CTO)  
Kira Holden, Lawrence, KS - Chapter 59

Certified Broadcast Networking Technologist (CBNT)  
Frederick Fazekas, Altoona, PA - Chapter 15

Allan Fenner, Akron, OH - Chapter 70

Brett Gibson, Suring, WI - Chapter 80

Jason Hney, Osceola, IN - Chapter 30

Elizabeth McCoy, Centralia, WA - Chapter 16

Terry Neal, Eagleville, TN - Chapter 103

David Stiefel, Chicago, IL - Chapter 26

Jenna Touchette, Chicago, IL - Chapter 26

### CERTIFIED BY LICENSE

Certified Broadcast Technologist (CBT)  
Michael Borschow, Dallas, TX - Chapter 67

Christopher Craig, Montpelier, VT - Chapter 110

Gordon Eaton, Sweden, ME



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### CERTIFIED TELEVISION OPERATOR (CTO)

Susan Cunner, Denver, CO

John Dowdel, Westminster, CO

### DIAMOND PROJECT

The following 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 Professional Broadcast Engineer (CPBE)  
James White, Desert Hot Springs, CA

Certified Senior Radio Engineer (CSRE) Digital Radio Broadcast Specialist (DRB)  
Edwin Bukont, Jr., Gallatin, TN - Chapter 103

Certified Senior Radio Engineer (CSRE)  
Michael Kerley, Wake Forest, NC - Chapter 93

George Kowal, Neptune, NY - Chapter 15

Dominic Mitchum, Athens, AL - Chapter 72

Certified Senior Television Engineer (CSTE)  
Joseph Conlon, Inver Grove Heights, MN - Chapter 17

Allan Fenner, Akron, OH - Chapter 70

Pierre Jaspas, Miami, FL - Chapter 53

George Kowal, Neptune, NY - Chapter 15

Romualdo Lintag, Brisbane, CA - Chapter 40

Certified Broadcast Radio Engineer (CBRE) Digital Radio Broadcast Specialist (DRB)  
Scott Solko, West Palm Beach, FL - Chapter 88

Certified Broadcast Radio Engineer (CBRE)  
Donald Chapman, Spring, TX - Chapter 105

Steven Herbert, Los Angeles, CA - Chapter 47

Certified Broadcast Television Engineer (CBTE)  
Franklin Bell, Passaic, NJ - Chapter 15

Alan Kline, Roseville, CA - Chapter 43

Certified Broadcast Television Engineer (CBTE) 8-VSB Specialist (8-VSB)  
Mark Pace, Carrollton, IL - Chapter 55

Douglas Smith, Nashville, TN

Certified Video Engineer (CEV)  
Jon Elmore, Ft. Worth, TX - Chapter 67

Certified Broadcast Networking Technologist (CBNT)  
Franklin Bell, Passaic, NJ - Chapter 15

Edwin Bukont, Jr., Gallatin, TN - Chapter 103

Steven Herbert, Los Angeles, CA - Chapter 47

Lucy Lee-Arceneaux, Phoenix, AZ - Chapter 9

Mark Pace, Carrollton, IL - Chapter 55

Robert Russell, Magnolia, DE - Chapter 18

Certified Broadcast Technologist (CBT)  
Aaron Read, East Providence, RI - Chapter 11

Certified Television Operator (CTO)  
Terry Tabb, Norfolk, VA

### 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 Professional Broadcast Engineer (CPBE)  
Stanford Carter, Bogue Chitto, MS - Chapter 125

Michael Everhart, Molalla, OR - Chapter 124

Bill Greep, Chaska, MN - Chapter 17

Kevin Rodgers, Hacketts Cove, NS - Chapter 100

Robert Stratton, Cocoa, FL - Chapter 42

Certified Professional Broadcast Engineer (CPBE) 8-VSB Specialist (8-VSB)  
Louis Johnson, IV, Lyndhurst, OH - Chapter 70

Certified Senior Radio Engineer (CSRE)  
Anton Mittag, White Plains, NY - Chapter 15

Certified Senior Radio Engineer (CSRE) AM Directional Specialist (AMD) Digital Radio Broadcast Specialist (DRB)  
John Hovanec, North Royalton, OH - Chapter 70

Certified Broadcast Radio Engineer (CBRE)  
Louis Caesar, Jr., New York, NY - Chapter 18

Brian Gullikson, Eagan, MN - Chapter 17

Ronald Huckeby, Butte, MT - Chapter 6

Derek Murphey, Fitchburg, WI - Chapter 24

Burley Stapley, Findley, OH - Chapter 104

Certified Broadcast Television Engineer (CBTE)  
Brandon Bouche, Garner, NC - Chapter 93

Kenneth Fuller, Studio City, CA - Chapter 47

Zhulietta Ibisheva, Honolulu, HI - Chapter 50

Robert Sulecki, Brownsburg, IN - Chapter 25

Jeffery Whaley, Winston, GA - Chapter 5

Certified Audio Engineer (CEA)  
Kevin Salger, Carson, CA - Chapter 47

Certified Video Engineer (CEV)  
Brandon Bouche, Garner, NC - Chapter 93

James Powell, Birmingham, AL - Chapter 68

Certified Broadcast Networking Technologist (CBNT)  
Steven Crum, Newport, MI - Chapter 104

Michael Davison, Northfield, MN - Chapter 17

John Hovanec, North Royalton, OH - Chapter 70

Louis Johnson, IV, Lyndhurst, OH - Chapter 70

Kevin Rodgers, Hacketts Cove, NS - Chapter 100

Walter Sewell, Highland, IN - Chapter 26

Joseph Torsitano, Colorado Springs, CO - Chapter 141

Mark Wittkoski, Coopersville, MI - Chapter 102

Certified Broadcast Technologist (CBT)  
Jarvis Brummitt, Cameron, NC - Chapter 93

William Hudson, San Carlos, CA - Chapter 43

William Harrison, Alexandria, VA - Chapter 37

Zhulietta Ibisheva, Honolulu, HI - Chapter 50

Nicholas Slade, Ottawa, ON - Chapter 100

Nathan Tate, Jr., Decatur, AL - Chapter 118

Certified Television Operator (CTO)  
Israel Alejandro, Allentown, PA - Chapter 120

Jackson Buraczewski, Cincinnati, OH - Chapter 33

Christopher Homer, Sahuarita, AZ - Chapter 74

David Malone, Schenectady, NY

Chris Rundel, Topeka, KS

HuiSung Sin, APO, AP

Michael Tonges, Canton, OH - Chapter 70

Certified Radio Operator (CRO)  
Robert Hageny, Oswego, NY - Chapter 22

Michael McCormick, Ogallala, NE - Chapter 87

HuiSung Sin, APO, AP



# SBE Releases New Self-Inspection Guidelines at NAB Show

Understanding and complying with FCC rules and regulations, along with all the policies, is not an easy task. While the FCC has an abundant amount of rules, just like standards and other legal regulations, it's important that the broadcast industry and thus the broadcast station adheres to a common, codified standard, in this case generally, the FCC rules and regulations. The alternative can be a significant monetary forfeiture and/or the possible loss of a station's broadcast license.

To address this and other issues, the SBE announced in October 2023 that it would release a series of broadcast station self-inspection guidelines to assist the station's broadcast engineer and management with compliance of FCC rules and regulations and other policies. These documents are must-have guides for determining compliance with the Alternative Broadcast Inspection Program (ABIP).

In the mid-1990s, the FCC published a series of checklists for stations to use to determine compliance with the FCC rules and regulations. Having not been updated in many years, it was realized that the checklists were no longer a sufficient resource to check for compliance with the rules and policies of today. Further, the FCC checklists did not offer guidance and practices that a station could follow for proper operations.

Later, the Alternative Broadcast Inspection Program (ABIP) was created. This program has become rather successful for stations to determine and regulate their compliance from an internal position without involvement from the Enforcement Bureau of the FCC and thus avoid penalties. ABIP has generally been run by the state broadcaster associations of each individual state.

In the spring of 2022, the Society of Broadcast Engineers, through its Government Relations Committee, formed a subcommittee with the goal of creating a number of guides that the broadcast engineer and station management could use to determine compliance with respect to the rules and regulations. The SBE is calling these Self-Inspection Guidelines. The SBE is developing them for every broadcast service.

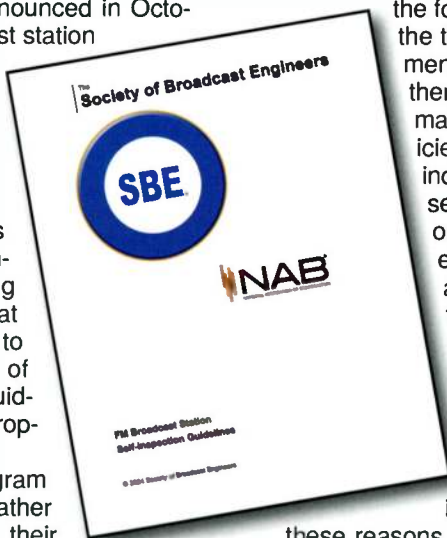
It was determined early on that it was important to involve all of the broadcast industry along with other interested parties in producing these documents. The SBE partnered with the National Association of Broadcasters (NAB) and others within the industry to review and further develop these new documents. The Guidelines are also being reviewed by the FCC.

The committee wanted to develop these guidelines to be more than just a simple checklist. The guidelines contain not only information in the form of a checklist, but a detailed explanation of the topic at hand. There are also numerous recommended practices listed within. These practices are there to help the broadcast engineer and station management establish what might be the best policies and procedures that can be applied to their individual station. The Recommended Practice sections should not be considered a substitute for outside consultation, as each individual case for each station's circumstance may differ. Instead, a station can look at the Recommended Practice sections for suggestions and principles that can assist the station to develop internal best practices within their operations.

It's important that station management, along with the broadcast engineer, understand that their compliance with these policies leads to professionalism within the industry and avoids FCC enforcement. For these reasons, we urge stations to obtain these Self-Inspection Guidelines and use them accordingly as they were meant to be used.

The SBE plans to release the first of the guidelines at the 2024 NAB Show in Las Vegas. As this issue of *The Signal* was prepared, the SBE and the NAB were working to organize a forum to discuss the release and the use of the guidelines. Check the NAB Show sessions for more information. The SBE and NAB booths will also have information on the guidelines, and a sample will be available.

The SBE welcomes input on the guidelines. Contact the SBE National Office.



# SBE Awards: Nominate Today

Who will be the next SBE Engineer of the Year award recipient be?

It could be you, it could be someone you nominate. This will be the 12<sup>th</sup> year that the Chapter Engineer of the Year award is nominated by SBE Chapters. The chapter honorees are then entered into consideration for the Robert W. Flanders SBE Engineer of the Year award. Each chapter can establish its own criteria for the chapter award. Individuals can also be nominated directly for the national award. For the national award, nominations need to be submitted to the National Office by June 17.

There are other honors as well. The James C. Wulliman SBE Educator of the Year; 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. Of the 13 awards recognizing chapters that are presented each year, a local chapter or SBE member make nominations for 10 of them. Many SBE members are highly qualified and deserving of recognition. Likewise, many chapters do an excellent job promoting the ideals and goals of the SBE. Please nominate these members and chapters so they can receive the recognition they deserve.

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

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

Recognition by your peers is the highest honor. Honor your colleagues today.



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# ENNES

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The trust offers scholarship and educational programming and grants that benefit broadcast engineering and the broadcast engineer. Submit tax-deductible donations, payable to the Ennes Educational Foundation Trust, to the Society of Broadcast Engineers; 9102 N. Meridian St., Suite 150; Indianapolis, IN 46260.

### THANKS TO THE FOLLOWING SUPPORTERS FOR THEIR CONTRIBUTIONS

#### John H. Battison Founder's Scholarship

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[sbe.org/ennes](http://sbe.org/ennes)

## Register for the SBE Leadership Development Course

Registration is open for the 2024 SBE Leadership Development Course, August 7-9, 2024, 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 the course again. Walton is also a tenured professor of management at Florida Tech, specializing in management and innovation. He actively researched in the fields of innovation management, business analytics and product lifecycle management and has authored more than 100 publications.

Specifically designed for broadcast engineers who have or aspire to have management responsibilities, the course is for technically adept people to acquire and develop skills for sound leadership, supervisory and management skills. The 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, a certificate of completion, light breakfast and afternoon snacks.

The cost is \$720 for SBE Members and \$775 for Non-Members. Register at [sbe.org/ldc](http://sbe.org/ldc). Interested in sending a group of five or more from your company? Contact SBE Education Director Cathy Orosz at 317-846-9000 or [corosz@sbe.org](mailto:corosz@sbe.org).



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## LEGAL PERSPECTIVE

By Coe Ramsey, Patrick Cross and Noah Hock  
SBE Regulatory Counsels  
cramsey@sbe.org, prcross@sbe.org, nhock@sbe.org

# A Busy Time at the FCC

The FCC has been active lately, and there have been several important regulatory developments – large and small – in just the last several weeks. We'll highlight some of the items most relevant to broadcast engineers, and the ongoing operation of the stations they serve.

### Mandatory Broadcaster Participation in DIRS and NORS

According to a recently released Further Notice of Proposed Rulemaking (FNPRM), the long-time voluntary nature of broadcasters' participation in the Disaster Information Reporting System (DIRS) may soon be ending, as the FCC has proposed mandatory broadcast reporting both in DIRS and the Network Outage Reporting System (NORS).

**Background.** In 2007, after Hurricane Katrina, the FCC adopted DIRS to facilitate greater operational understanding of the status of critical communications infrastructure during and immediately after emergencies. DIRS was initially voluntary; the FCC would "activate" the system during a natural disaster or other qualifying emergency and encourage various stakeholders – from broadcast, to cable, to wireline and wireless providers and beyond – to submit reports on the status of their infrastructure. Over the last several years, however, the FCC has considered transitioning to mandatory reporting for various entities. Earlier this year – in a Report and Order accompanying the FNPRM – the FCC took its first steps into mandatory DIRS reporting, requiring cable, wireline, wireless, and interconnected Voice over Internet Protocol (VoIP) providers to make daily DIRS reports when the system is activated.

Adopted several years earlier in 2004, NORS has always been mandatory for wireline, cable, satellite, wireless, VoIP, and Signaling System 7 providers. The purpose behind NORS reporting is slightly different than DIRS – covered providers must report network outages that last at least 30 minutes and satisfy other specific thresholds.

**The FNPRM.** Noting that television and radio broadcasters "are sufficiently different in kind and resources" from other typical DIRS and NORS filers, the FCC now seeks comment on how, if at all, to modify broadcasters' reporting obligation as compared to other providers. At the highest level, the areas on which the FNPRM solicits comments are: "the classes of broadcasters that should be included as mandatory filers, whether a simplified reporting process would be appropriate, and what reporting elements should be included for such a purpose in NORS and/or DIRS."

### Wireless Multichannel Audio Systems

The Commission has adopted a Report & Order establishing technical rules for operation of an emerging wireless microphone technology: Wireless Multichannel Audio Systems (WMAS). The Order concurrently updated FCC rules governing traditional wireless microphone operations, but those updates are not addressed here.

**What are WMAS?** WMAS are designed to increase spectrum-use efficiency for wireless microphone deployments, particularly as part of large events or in particularly crowded areas with frequent need for such equipment. Whereas the conventional – i.e., non-WMAS – approach may require deploying several individual microphones, each with a dedicated narrowband radio frequency, WMAS permits carriage of several audio channels within a single block of RF spectrum – potentially 24 or more channels within a 6 MHz band, according to at least one wireless microphone provider.

**Where are WMAS Authorized?** The Order authorizes WMAS op-

eration in most of the frequency bands where wireless microphones are currently permitted to operate – in licensed and unlicensed capacities – including portions of the VHF and UHF TV bands, and the 600 MHz duplex gap. Within the TV bands, WMAS may operate with a maximum bandwidth of 6 MHz, but must be contained within a single 6 MHz channel (rather than spanning two adjacent channels). These rule changes, including authorizing WMAS deployments, will take effect 30 days after the Order is published in the Federal Register. As of this writing, the Order has not yet been published.

**Addressing Interference Concerns.** In comments and ex parte activity, the NAB and other industry advocates – including the SBE – raised concern that WMAS authorization could interfere with existing narrowband microphone users, broadcasters' electronic newsgathering efforts, and similar activities. The Order rejected those concerns, finding such interference would be unlikely due to the anticipated use of WMAS for only large-scale events requiring access to numerous simultaneous audio channels, and the relatively short distances signals are expected to travel. However, that doesn't mean broadcasters are without recourse in the event they experience interference – under the FCC's existing rules governing low-power auxiliary devices (such as wireless microphones), licensed users (WMAS or otherwise) are required to coordinate among themselves to ensure they do not cause mutual interference. And, similarly, unlicensed WMAS would be required to coordinate with or adapt to other unlicensed users to resolve any conflict or resulting interference.

### EAS Alert Distribution in Multiple Languages

In a recently released Notice of Proposed Rulemaking the FCC is seeking comment on how to facilitate the distribution of multilingual alerts; specifically, whether it would be advisable for the FCC to create template alert scripts to be pre-installed on broadcast EAS equipment. According to the NPRM, this could assist broadcasters with more easily disseminating EAS alerts in languages other than English.

**Background.** The EAS has long been one of the nation's most important emergency alerting tools, and is regularly used by national, state, and local authorities to notify communities of impending emergencies. Although the vast majority of EAS alerts are transmitted in English, alerts are technically capable of transmission in any language. As a practical matter, however, the significant time constraints on EAS participants' ability translate an alert prior to distribution makes multilingual alerting impractical.

**The NPRM.** The NPRM seeks ways to facilitate the distribution of multilingual alerting by removing the need to translate alerts prior to distribution. In particular, the NPRM proposes to create template alert scripts that would be pre-translated into the 13 most commonly spoken non-English languages in the United States (based on U.S. Census data) – Spanish, Chinese, Tagalog, Vietnamese, Arabic, French, Korean, Russian, Haitian Creole, German, Hindi, Portuguese, and Italian – as well as English. These pre-translated template-based scripts and audio files would be produced by the Commission, and pre-installed in EAS equipment. The NPRM then proposes requiring EAS participants to transmit template alerts using the language that corresponds to the station's primary language (i.e., the language of their programming content).

### LINK

#### Foreign Language NPRM

[docs.fcc.gov/public/attachments/FCC-24-23A1.pdf](https://docs.fcc.gov/public/attachments/FCC-24-23A1.pdf)





# EMERGENCY PREPAREDNESS

**B**roadcasting is a continuous operation. While many stations provide recorded content on-demand, the prime service is the live stream, whether it's over-the-air or online. From the business side, the idea that "when you're not on the air, you're not making money" is true, not being on the air also means you're not serving your audience. The one-to-many, over-the-air broadcasting model has proven countless times to be a reliable way to inform the public during an emergency. Whether the station outage is because of equipment failure (perhaps catastrophic), a natural disaster or some other cause, restoring the service is paramount.

It's not a matter of *if* a crisis will arise, but *when*. Hoping to avoid a problem is not a practical plan. In an ideal world, a completely redundant system exists for all the equipment and facilities. The reality is that there are costs involved to create and maintain perfect redundancy. A more practical method is to identify weaknesses and single-points of failure so that when the need arises, a plan is already in place. You may not be able to completely avoid down time, but you can greatly minimize it.

This special section of *The Signal* covers ideas and presents plans you can implement to ensure your operation continues.

— *Chriss Scherer, CPBE, CBNT; editor*

## It's not *if* an emergency occurs, it's *when*. *By Kevin Trueblood, CBRE, CBNT*



**T**ime and time again broadcasters have come through for our communities during times of crisis connecting listeners and viewers to life saving information.

But we can't do that if we've fallen victim to the same disaster and become another part of a failed infrastructure.

Different parts of the country are more or less prone to different disasters and require different levels of planning. But threats to our facilities aren't just natural disasters. Events such as fires, flooding, terrorism, or cyber-attacks can find us abandoning our studios or consuming our transmission facilities. Do you know what you'd do if this happens to you?

The best and most obvious solution is to have a licensed auxiliary facility. A backup transmitter and antenna won't do you any good if they're both in the same room that caught fire or if your tower collapsed. If you lose your main transmission facility a couple of mouse



**After a fire, smoke and water damage can be more extensive than the fire damage.**

clicks at a backup facility will return you to air and keep the pressure off to resolve the problem and your listeners or viewers won't miss you.

Of course, the reality of accommodating that in the budget is easier said than done. It's hard to justify the high cost of a facility that, ideally, you never use.

The good news is off-site auxiliary facilities can be as simple or as complex as you want them to be. A single, small, frequency-agile transmitter attached to a broadband antenna on top of your studio STL antenna may be enough to cover your market and provide backup for any one of your stations that fail. Or you have multiple transmitter sites in your market where different antennas can be mounted and

programming delivered via IP codecs over the internet.

Now more than ever there are low-cost and low-power transmitters that would be perfect for these applications if your budget will not allow a full-powered auxiliary facility.

How about your studio facility? Things you have to keep in mind for hitting the eject button on your studios is not just where are you going to operate, but *how* are you going to operate?

Sure, it could be as easy as loading up a bunch of audio or video files in a playlist and connecting it right to the transmitter.

But that doesn't do any good if your staff is wanting to cover the disaster that displaced you or allow you to play spots. So the idea is to keep your programming and your capabilities as close to normal as possible.

If you're operating during a disaster, keep in mind if it is widespread, having a local backup studio facility may not be feasible for the same reasons you had to leave your original facility. Lack of power, infrastructure, difficulty in getting around, and staffing issues may prove to be too much to overcome.

A backup studio facility very well could

see [EMERGENCY](#), p. 14



**This site's equipment was destroyed by Hurricane Ian. Courtesy of John Clark, Relevant Radio**

A special section to

THE

# Signal



# Traditional ENG Is Crucial During a Crisis

## It's a situation of "Use It or Lose It"

By RJ Russell, CPBE, ATSC3, CBNT



**W**e've all been there; we grab the cell phone and try to make an important call and can't get a connection. Is the network overloaded? Is there a cell site nearby offline? We need to make this call, yet we can't, and there is nothing we can do about it. Now apply this same situation to our industry's reliance on cellular-newsgathering (CNG) and figure out how you're going to tell someone this critical, breaking news story isn't going to make air and there is nothing anyone can do about it.

Cellular communications have become the lifeblood of breaking news with the proliferation of bonded cellular devices able to be carried in the field with ease and no specialized training needed for operations. Our mobile phones make it easy to get the story to the newsroom on a moment's notice but what happens when these devices don't work? How did we get these things done before the dawn of mobile phones and bonded cellular devices?

Electronic newsgathering (ENG) was the backbone of our industry for years. It played a vital role in our ability to get breaking news and important information to our viewers in a timely manner. While we still rely on this technology to support airborne operations, it seems its importance for ground-based storytelling has gone the way of the dinosaur. In my role as the SBE Frequency Coordination manager, I hear too many stories of ENG equipment not being used, engineers telling me they don't even know if that equipment still works or seeing ENG trucks parked in various states of disrepair. Equipment that was so vital to us just a few years ago is now completely neglected. The first thought that comes to my mind when I see or hear this is, what are these stations going to do in the event of a cellular network disruption?

Sure, you can say that something like a large-scale network outage isn't likely to happen, but it has and is likely to happen again when that big natural disaster or massive breaking story develops. The 2005 London subway bombing led to a reaction in NYC where the networks inside the tunnels were shut-down to prevent a possible similar attack. In 2006, because of the 2005 incident, the National Security Telecommunications Advisory Committee established a new standard operating procedure for the National Coordinating Center for Telecommunications commonly referred to as NCC SOP 303. This SOP allows for local law enforcement or similar agencies to call for a shutdown of the private wireless network, effectively rendering CNG equipment useless.

The same local law enforcement agencies also have the capability to disrupt cell signals to protect their operations and ensure public safety. In 2011, San Francisco's BART, Bay Area Rapid Transit, shut down wireless service

in select subway stations to stave off protests following a police officer-involved shooting.

I know these are extreme examples, but what about simple network overloads? We remember the Boston Marathon bombing in 2013. Rumors spread regarding the cell networks being shut down, but it was simply the network being completely overloaded. Attend a major sporting event or other large public happening and see how well your mobile device works. We haven't even touched on natural disasters and trying to rely on cell towers that aren't likely to have generator backup. Could you imagine explaining to your newsroom or general manager that they won't be able to cover the story because their CNG equipment won't work, and their ENG equipment is no longer operational?

### Planning is the Key

What can we do as engineers to ensure that this situation doesn't happen to us? We need to ensure that ENG and other systems that we have access to are part of our disaster recovery plans and are exercised on a regular basis. We all know that our disaster recovery plans are only as good as our knowledge of them, the systems required to support them, and routine usage of that equipment. One way to accomplish this is to declare a regular or routine "no cell day," where your staff has to operate without their CNG devices and their mobile phones. Yes, this means they have to roll the ENG vans or use the portable ENG equipment, establish a live shot via microwave, and probably just as important, communicate via two-way radio. I bet you forgot about that piece of the puzzle. In my past roles as a chief engineer, this was something that I made part of our regular practices on no less than a quarterly basis but preferably monthly. Sure, there was pushback, but in more than one instance our staff's ability to perform these functions saved a major story from being killed and made the staff heroes to management.

There is another reason you should be

see [ENG](#), p. 14





# Advanced Emergency Alerting with ATSC 3.0

*It is unthinkable that our emergency informing system won't be free, over-the-air, UHF NextGen broadcast on smartphones.*

By Fred Baumgartner, CPBE, ATSC3, CBNT



As US broadcasters, we mostly entertain – until things go terribly wrong and we become essential for saving lives and property. We engineers stock spares and make plans to ensure we can perform our critical role. In our century, the tools and our abilities have continued to advance. Still, it might feel like broadcasting's role is being usurped by interactive wireless emergency technology.

As you might guess (and a study commissioned by Sinclair Broadcast confirms, as do others), people – by very wide margins – receive almost all warnings on their smart phones, and they are most likely to first go to that smart phone for critical information. Further, emergency managers look increasingly to emergency apps (Everbridge likely being the most recognized).

The state-of-the-art ideal emergency warning and informing system is almost certainly a persistent app that runs on smartphones, and maybe smart TVs, home gateways, cars, and specialty devices. The app knows where it is and has learned from its user what to alert for and what not to. While everyone is interested in “very bad day” situations, some also want to be alerted when a child's school, parents, or a second residence – even out of state – experiences an event. Others want modest things like storm or freeze watches. No one wants to be over alerted, and the app is that personalized filter.

Wireless networks are more than two-orders of magnitude less reliable than high power, big tower, broadcast. While wireless networks famously choke and physically fail when stressed, there has never yet been an event where receivable broadcast signals did not survive. Broadcast mesh networks (we have done this since EAS's mesh network replaced EBS's fragile daisy chain with EAS's multiple sources) have no peer for resilience. For broadcast to be modern-day, it must be both UHF and IP. It is impossible to build a useful enough MW or VHF receiver into a cellphone. UHF also exhibits optimum building penetration – why cellphones work in elevators and basements while AM/FM radios struggle. This is why carriers are willing to pay enormous sums for UHF spectrum, and no carrier has any interest in VHF or lower spectrum. Apps run on IP, and neither AM, FM (including RDS), nor DTV supports a suitable IP connection. Besides, ATSC 1.0's 8-VSB cannot be received when moving. The only current technologies that meet emergency alerting content requirements are broadcast ATSC 3.0 and 5G.

## Addressing the Shortcomings

In America, the other drawback is that emergency management has little capability to aggregate, validate, prepare, and present critical information. Their job is managing resources and response, not mass communication. At best, even the Weather Service (which gets better by the day and puts IPAWS to good use) has nowhere near the ability of even the smallest TV news station to gather information from trusted sources and entities in rapidly developing situations, prepare graphics, markup maps, point cameras, put mics in front of authorities, or articulate critical emergency information.

ATSC 3.0 is all IP so anything can be streamed or pushed.

NextGen Broadcast should also carry full-service “radio” if for no other reason than radio (and an active dashboard map) is what works best in fleeing automobiles. NextGen Broadcast also has an indispensable bootstrap that periodically wakes up devices from necessary battery conserving sleep to listen for alerts. Nextgen receivers scan for the strongest most appropriate signal even as we move around, and if some stations go dark. NextGen (ATSC 3.0) stations can also carry location/timing as a backup to GPS. GPS is a potential single point of failure that nature or enemies can easily destroy. GPS failure will be catastrophic. With BPS, (Broadcast Positioning System) you can at least fly airplanes and helicopters, deploy aid, rescue people, and keep data/communications networks timed and working while GPS is out.

The math is simple and undeniable: **smartphone + emergency app + NextGen Broadcast w/Location + news = the emergency alerting and informing system** Americans should have. As engineers we know all the pieces well, and we know how to fit them together. I have no crystal ball, but my guess is that as the world goes through this NextGen Broadcasting learning curve, the emergency community and regulators will eventually experience an epiphany and want us to transmit alerts, critical information, and BPS location. They will also want cell phones to have chips and TVs that have 3.0 chips to run the app. For our owners? Those chips in phones/cars and an interactive, location aware emergency app that can support things our news departments love is also the platform we can build any number of beneficial businesses on. For broadcast engineers? A remarkably interesting future we play a critical role in.

An emergency informing system with a foundation that isn't smartphones and OTA broadcast is absurd.

*Baumgartner is an SBE Life Member.*





## EMERGENCY, from p. 11

be a separate room of a transmitter site. Many of us have old consoles and computers hooked up for just such a purpose. But how often has it been tested? Can you guarantee it would work should the time come? Does your staff know where your transmitter facility is? Will it have water, be safe, and be secure? We don't mind the lack of restroom facilities usually, but will a dozen staffers in a 20'x20' shelter feel the same way?



The Public Radio Satellite System makes available an emergency kit for public radio stations to get back on the air in an emergency.

## Know Who Your Friends Are

What about another broadcaster? I work for the local public television station in southwest Florida, and during Hurricane Ian we welcomed a local commercial station into our building to continue its 24/7 news coverage because our facility was in a safer location. This was part of a contingency plan the company had made to ensure they were always on the air and kept resources in our building year-round. They also brought over talent to rehearse doing newscasts in our facility once a year so they were familiar with the layout and the protocols so things

would run smoother in the event they moved to our facility. While there were a few bumps in the road, overall everyone was able to do their job and the station remained on the air for a few days during and after the storm.

Similarly, is there a sister group in a nearby market who could take over for you? Or perhaps another broadcaster willing to make a reciprocal agreement with you? Establishing those relationships and resources could prove valuable should the need arise.

Regarding communications: Keep in mind cellular service may be down. Following Hurricane Ian, cell service did not reliably work for about four days. The good news is technology such as Starlink could give you localized high speed and reliable Internet connectivity wherever you are, including STL connectivity. But in establishing your backup plans, be sure the staff knows ahead of time where to report and what to do.

Finally, the most important thing to consider in disaster recovery is your staff. We're all professionals and we're able to handle adversity in the face of serving the public. But we're also not robots. Make sure your staff has the resources they need: A roof over their head, water, food, a place to sleep, the ability to care for their family, and time for them to mentally handle the challenges they're dealing with is crucial to making sure everyone comes out okay.

While it's cliché, it's also true. The time to plan isn't when a disaster strikes. It's now. When disaster strikes, you and everyone else are going to be trying to find fuel, food, shelter, and trying to recover. I noted earlier, cellular communications and Internet typically go down, and much like *Alway* broadcasters are willing to step up when the community needs us. Having a plan B and knowing what to do will help ensure you are there. ■ *Trueblood is Associate General Manager, Technology & Operations; WGCU Public Media.*

## ENG, from p. 12

using this equipment on a regular basis, and that is for legal reasons. Without regular use, your station can fall out of compliance with part 47 rules, which could require you to forfeit your license to this valuable spectrum. I don't think I can say it more succinctly than SBE Regulatory Counsel Patrick Cross, so I'll just provide his statement to me.

"The general rule for automatic termination of wireless authorizations is 47 C.F.R. s. 1.953, specifically subsections (b) and (c). That rule provides automatic termination for geographic licenses after 180 consecutive days without operating and, for site-based licenses, 365 consecutive days without operating. (Section 1.907 provides the definitions for 'geographic' and 'site-based' licenses; Part 74 BAS and Part 101 microwaves generally fall within 'site-based.')

While the number of days not operat-



ing may seem extreme, I have run into more than a few station chief engineers that have told me it has been at least a year, maybe several years, since this equipment has been used. As the nation's

evaluation of this valuable commodity, we call spectrum, continues and more of it is designated for flexible or shared use, it is vital that we protect our access to it by actually using it.

Just like our bodies, without regular use, these systems can quickly deteriorate and their function lost. The Broadcast Auxiliary Services (BAS) spectrum must continue to play a vital role in our operations or we run the risk of losing it when we need it most, as part of our disaster recovery plans. ■

*Russell is SBE Frequency Coordination Manager.*

Page 11 photos: building fire: Vladimir Shipitsin; tornado: Ralph W. lambrecht; flooded street: ALTEREDSNAPS; night lightning: Devansh Bose; power lines: Skitterphoto; title lightning background: Andre Furtado

Page 13 photo: Andrea Piacquadio





## FOCUS ON THE SBE

By James Ragsdale  
SBE Executive Director  
jragdale@sbe.org

# The NAB Show: Full of Learning Opportunities

If you're making your way to Las Vegas for the 2024 NAB Show, you'll find a great collection of educational, networking, and social opportunities for broadcast engineers. The SBE Education Committee has been working for months preparing the SBE Ennes Workshop at the NAB Show, which will be held on Friday, April 12 and Saturday, April 13. The SBE and the NAB partnered this year on the SBE Ennes Workshop, and registration is handled via the NAB Show registration. For \$259, workshop registration includes continental breakfast, break snacks, and lunch each day. Registration also includes sessions and networking activities within the selected track, plus NAB exhibits, attractions, pavilions, Main Stage and on-floor theaters, networking and anything noted as All-Badge Access. There will be two tracks to choose from, each beginning on Friday and ending Saturday afternoon by 6:00 p.m. The tracks are RF101 Boot Camp and Media Over IP Essentials.

The RF101 track starts with Ohm's Law and ends with RF broadcast systems and the associated components. Targeted for newer engineers and those with IT backgrounds, it's also a good refresher for experienced engineers, involving fast-paced

sessions presented by industry experts. The media over IP track features the smartest technical influencers in the industry who provide a taste of the requisite design protocols, techniques, references, standards and real-world examples of how to implement or migrate your facility to this new Media over IP technology. On Saturday afternoon at 4 p.m., the two tracks will join together for a joint session on management skills, with the goal to bring engineering back into the management team.

### SBE Member Registration

SBE Members can use the code SBE24 to receive \$150 off registration for the NAB Show Core Education Collection and receive a free Exhibits Pass.

The NAB Broadcast Engineering and Information Technology Conference (BEITC) will offer its usual extensive array of speakers and topics over a four-day period. The SBE is pleased to be a producing partner with the NAB once again on the BEITC including 100 sessions, the NAB Show website has a complete rundown of all the sessions and speakers.

Kicking off the BEITC on Saturday, April 13 is the Opening Session at 10:00 a.m. The

SBE's session of the BEITC is on Monday, April 15 at 1:30 p.m. in Rooms W220-221. This year's program is again organized by Tom Mikkelsen, a principal at National Tele-Consultants and Stan Moote, CTO at IABM. Tom and Stan will moderate the Broadcast Technology Update, a panel reviewing a variety of advanced technology solutions, including ATSC 3.0 and AI. Panelists are Lynn Claudy, senior VP – technology for the NAB, and Ernie Ensign, AVP - news technology & operations for the Sinclair Broadcast Group. Progress in implementation over the past year will be included with a Q&A session at the end.

The SBE booth, SBE Ennes Workshop, BEITC session, SBE Membership Meeting and SBE Member Reception will all be located in the West Hall.

Register at the NAB website and [NAB-show.org](http://NAB-show.org). I hope to see many of you in Las Vegas during the show. Be sure you include the SBE Spring Membership Meeting and the member reception in your schedule on Monday, April 15. They will be held at 5 p.m. and 6:15 p.m. respectively in rooms W220-221 and W213.

## These SBE Sustaining Members are Sponsoring Events at the NAB Show

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## ENGINEERING PERSPECTIVE

Gary Olson  
Chair, Sports Video Group Cyber Security Working Group  
gary@ghogroup.com

# Cyber Security is a Team Sport

Cyber threats are a shared risk and concern of everyone. Breaches exposing critical information and ransomware are disrupting businesses. Malware causing substantial financial losses are unfortunately more common than not and impact all industries. As the broadcast industry and media technology has transformed to computer and network-based technology, it is now fully exposed to this issue.

The broadcast networks with their O&Os, station groups, manufacturers and service providers are all interconnected. Service and maintenance is provided via remote access across the open Internet. At live events every production and broadcast entity are connected and exposed - even the audience. There is no such thing as "air gapped" anymore, which poses an interesting and different set of challenges.

All media operations are integrated at some level, and media services are no longer fully segregated. The security teams have become aware and informed about how media technology operates, along with the risks associated with production and the challenges to protect broadcast while protecting the systems. But media production has certain peculiarities and eccentricities different from most other industries. Waiting for a virus scan to complete prior to a broadcast or live sporting event is not acceptable.

If a station group is attacked, every entity connected to any part of the group is exposed, operators, service providers, ven-

dors and viewers!! If a vendor's product is compromised, how does that impact their customer, if a news clip uploaded for airing is corrupt or infected how is On Air impacted?

Incident planning and response is critical



to both protecting and recovering from a cyber incident. Most cybersecurity professionals agree it's a when, not if situation. Incident planning and response must be multifaceted and encompass both internal and external resources. Internal departments include broadcast engineering, legal, finance, IT and management. Then there are the external resources i.e. multi-vendor support, law enforcement, insurance companies and security specialists.

### Keep it Clean

Streaming services are a live connection to content providers, content distribution net-

works and the viewer. How much damage would an infection cause? And now work-from-home and remote operators have added a new dimension to this problem.

Communication is one of most important pieces of cybersecurity. Good communication is also multifaceted. Cyberattacks do not happen in a vacuum, and this is an industry where technology is common across all users and most service providers are integrated at some level during major live events.

This is not about sharing secret sauces or opening the kimono; this is about sharing knowledge and information to help each other reduce the risk potential of a cyberattack and communicate awareness in the unfortunate circumstance of an incident. It can include sharing notes on how to plan, i.e. communication strategies and staying on the air while addressing a problem. Across the entire media industry if it affects one, the odds are it will affect all at some point. So, communicating an incident helps to put everyone else on notice to pay extra attention and inform their organizations. When a patch or a fix is found to the attack, that must be effectively communicated as well.

Working together as a community on cybersecurity can only help mitigate the threat situation and help reduce the impact of an attack.

All industries have many trade groups and media is no different. Many trade organizations have the same set of members or subsets of the same groups of members. One of the great benefits of today's technology is the ability to easily communicate and set up communication channels to share knowledge and information. This doesn't compromise anyone's corporate security, it's easy to moderate and there's no travel required. It doesn't even need yet another meeting.

How about establishing a communication channel with a member from each group to share knowledge and information? Each representative can share the knowledge to their own group. Within the communication channel, maybe there can be a place that is open to members of all groups to post threat discoveries: *Communicate!*

This could become an exceptional team in the cyber war games!

Photo: Panumas Nikhomkhai

# Share Expertise: Become a Mentor

The SBE invites *all* members to participate in the SBE Mentor Program ([sbe.org/mentor](http://sbe.org/mentor)). Now in its seventh year, the program aims to develop new broadcast engineers through relationships with more-seasoned professionals. This relationship is mutually beneficial in that it offers less experienced SBE members to gain knowledge and experience; while the seasoned mentor gives back to the profession.

There are two types of mentor participation. While regular mentors are paired with a mentee to provide guidance, there can be times where a mentee has questions in an area that may not be the mentor's main field of expertise. With this, the SBE Mentor Program also has Subject Matter Expert (SME) Mentors available. SMEs can be brought in as the need arises. Mentors can serve in one or both roles.

"Mentorship can contribute to personal and professional growth. Whether it's building confidence, improving communication skills, or expanding one's technical expertise, mentorship can be a transformative experience," said SBE Mentor Committee Chair Pierre Jaspas, CSTE. "The schedule is established between the two parties when it best accommodates their schedules. Remote mentoring is also an option."

SBE members are encouraged to become mentors. You'll have the opportunity to help others grow and excel in their careers, while also gaining valuable experience and insight into the industry. To apply, visit [sbe.org/mentor](http://sbe.org/mentor).



# SUSTAINING MEMBERS

Support the companies who support the SBE and the industry

- AC Video Solutions • 2014**  
Andrea Cummins 201-303-1303  
Consulting, Systems Design/Integration
- Alabama Broadcasters Association • 2024**  
Sharon Tinsley 205-982-5001  
Alabama Association for Radio & TV Broadcasters
- American Amplifier Technology/Shively Labs • 1996**  
Steve Wilde 916-978-1899  
Quality Broadcast Products
- American Tower Corporation • 2000**  
Tiffany Yu 603-930-9091  
Development/Construction/Management
- Aqua Broadcast • 2024**  
Brendan Loft 44 203411 0387  
COBALT FM Transmitters
- Barnfind-USA, Inc. • 2021**  
George Gonos 919-748-7373  
Fiber Transport Solutions
- BB&S Lighting • 2023**  
Tom Yuhas 800-820-6610  
Manufacturer and Developer of High-end LED Lighting
- Blackmagic Design • 2012**  
Terry Frechette 408-954-0500  
Production Switchers, Digital Cameras, Routers, Video Editing and Monitoring, Color Correction, Video Converters
- Bracke Manufacturing LLC • 2012**  
Patra Largent 949-756-1600  
RF & Microwave Components
- Broadcast Depot • 2018**  
Tim Jobe 305-281-7540  
TV, Satellite, Radio, IP
- Broadcast Devices, Inc. • 2015**  
Robert Tarsio 914-737-5032  
Audio/RF Support Products
- Broadcast Electronics Inc. • 1978**  
Perry Priestley 217-224-9600  
Radio Equipment Manufacturer
- Broadcast Software International • 2016**  
Marie Summers 541-338-8588  
Radio Automation, Audio Logging
- Broadcast Supply Worldwide • 1986**  
Brian Walke 800-426-8434  
Audio Broadcast Equipment Supplier
- Broadcasters General Store • 2004**  
Karly Kerstin McBride 352-622-7700  
Broadcast Audio Video Distributor
- Burk Technology • 2019**  
Matt Leland 978-486-0086 x703  
Transmitter Facility Control Systems
- Cavell, Mertz & Associates Inc., a Division of Capitol Airspace Group, LLC • 2011**  
Gary Cavell 703-392-9090  
Consulting Services
- Comrex Corporation • 1997**  
Chris Crump 978-784-1776  
Audio & Video Codecs & Telephone Interlaces
- Continental Electronics • 1976**  
Dale Dalesio 412-979-3253  
TV and Radio Transmitters
- Crawford Broadcasting Company • 2021**  
Cris Alexander 303-481-1800  
Media Company
- CueScript • 2014**  
Michael Accardi 203-763-4030  
Teleprompting Software & Hardware
- Cumulus Media, Inc. • 2021**  
Conrad Trautmann 212-419-2940  
Audio Media Company
- Davicom, Division of Comlab, Inc. • 2014**  
Louis-Charles Cuierrier 418-682-3380 x512  
Remote Site Monitoring and Control Systems
- Dielectric • 1995**  
Cory Edwards 207-655-8131  
Radio & TV Antenna Systems and Monitoring
- Digital Alert Systems, LLC • 2005**  
Bill Robertson 585-765-1155  
Emergency Alert Systems
- DoubleRadius, Inc. • 2012**  
Jeffrey Holdenrid 704-927-6085  
IP Microwave STL
- Drake Lighting • 2015**  
Dave Sheppard 270-804-7383  
FAA Obstruction Lighting - Medium and High Intensity
- DTS Inc./HD Radio Technology • 2014**  
George Cernat 443-539-4334  
HD Radio Technology
- Econco • 1980**  
Debbie Storz 800-532-6626 530-662-7553  
New & Rebuilt Transmitting Tubes
- ENCO Systems Inc. • 2003**  
Samantha Bortz 248-827-4440  
Playout and Automation Solutions
- ERI - Electronics Research • 1990**  
Zachary Bailey 812-925-6000  
Broadcast Antennas, Transmission Line, Filters/Combiners, Towers and Services
- Floral Systems • 2008**  
Shawn Maynard 877-774-1058  
Television Broadcast Automation
- GatesAir • 1977**  
Mark Goins 513-459-3710  
Radio/TV Transmitters, STL Codecs
- Georgia Association of Broadcasters, Inc. • 2024**  
Allison Fulton 770-395-7200  
Georgia Association for Radio & TV Broadcasters
- Heartland Video Systems, Inc. • 2011**  
Dennis Klas 920-893-4204  
Systems Integrator
- Hitachi Kokusai Electric Comark • 2013**  
Jack McNulty 413-998-1523  
Manufacturer Broadcasting Transmission Equipment
- Indiana Broadcasters Association • 2019**  
Dave Ariand 317-701-0084  
Indiana Association for Radio & TV Broadcasters
- Inovonics Inc. • 2012**  
Gary Lührman 831-458-0552  
Radio Broadcast Equipment
- Jampro Antennas Inc. • 2011**  
Alex Perchevitch 916-383-1177  
DIV, FM-HD Radio, DVB-T/T2, ISDB-T, DAB
- Kathrein USA Inc. • 1985**  
Les Kutasi 541-879-2312  
Antennas for Broadcasting & Communications
- Kentucky Broadcasters Association • 2024**  
Roger Gribbins 502-460-6712  
Kentucky Association for Radio & TV Broadcasters
- Kintronc Labs, Inc. • 2015**  
Brad Holly 423-878-3141  
Radio Broadcast Antenna Systems - ISO9001 Registered Company
- latakoo • 2021**  
Paul Adrian 214-683-0791  
Media Workflow Automation
- LBA Technology Inc. • 2002**  
Jerry Brown 252-757-0279 x228  
AM/MW Antenna Equipment & Systems
- Linkup Communications Corporation • 2017**  
Mark Johnson 703-217-8290  
Satellite Technology Solutions
- LumenServe • 2023**  
Bear Poth 512-423-8323  
Tower Lighting
- LYNX Technik • 2007**  
Steve Russell 661-251-8600  
Broadcast Terminal Equipment Manufacturer
- Markertek • 2002**  
Adam June 845-246-2357  
Specialized Broadcast & Pro-Audio Supplier
- Micronet Communications Inc. • 2005**  
Jeremy Lewis 972-422-7200  
Coordination Services/Frequency Planning
- Missouri Broadcasters Association • 2024**  
Terry Harper 573-636-6692  
Missouri Association for Radio & TV Broadcasters
- Moseley Associates Inc. • 1977**  
Bill Gould 805-968-9621 x785  
Digital STLs for Radio and Television
- MusicMaster • 2014**  
Jerry Butler 352-231-8922  
Advanced Music Scheduling Solutions
- National Association of Broadcasters • 1981**  
Industry Trade Association 202-429-5340
- National Football League • 1999**  
Ralph Beaver 813-282-8612  
Game Day Coordination Operations
- Nautel Inc. • 2002**  
Jeff Welton 877-662-8835  
Radio Broadcast Transmitter Manufacturer
- Nemal Electronics Int'l Inc. • 2011**  
Benjamin L. Nemser 305-899-0900  
Cables, Connectors, Assemblies and Fiber Optic
- Ohio Association of Broadcasters • 2024**  
Christine H. Merritt 614-228-4052  
Ohio Association for Radio & TV Broadcasters
- Orban Labs, Inc. • 2011**  
Mike Pappas 480-403-8300  
Audio Processing AMFMTV
- Potomac Instruments • 1978**  
Zachary Babendreier 301-696-5550  
RF Measurement Equipment Manufacturer
- ProAudio.com - A Crouse-Kimzey Co. • 2008**  
Mark Bradford 800-433-2105 x560  
Proaudio Broadcast Equipment Distributor
- Propagation Systems Inc. - PSI • 2010**  
Doug Ross 814-472-5540  
Quality Broadcast Antenna Systems
- Quintech Electronics and Communications Inc. • 2002**  
James Herbstritt 724-349-1412  
State-of-the-art RF Hardware Solutions
- QVC • 2011**  
Kevin Wainwright 484-701-3431  
Multimedia Retailer
- 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
- Sage Alerting Systems Inc. • 2010**  
Heald Hric 914-872-4069 x113  
Emergency Alert Systems Products
- SCMS Inc. • 2000**  
Bob Cauthen 800-438-6040  
Audio and RF Broadcast Equipment Supplier
- Shure Incorporated • 2012**  
Bill Ostry 847-600-6282  
Microphones, Wireless Systems, Headsets
- Sierra Automated Systems and Eng. Inc. • 2011**  
Al Salci 818-840-6749  
Routers, Mixers, Consoles, Intercoms
- South Dakota Broadcasters Association • 2024**  
Steve Willard 605-224-1034  
South Dakota Association for Radio & TV Broadcasters
- Staco Energy Products Co. • 2010**  
Paul Heitgenberg 937-253-1191 x128  
Manufacturer of Voltage Regulators, UPS
- SuiteLife Systems • 2019**  
Nigel Brownett 310-405-0839  
Manage. Monitor. Control
- Sutro Tower Inc. • 1989**  
Raul Velez 415-681-8850  
Broadcast Tower Leasing
- Synthax Inc. • 2020**  
Brittany Hilton 754-206-4220  
Audio Codecs and Converter Solutions
- TBC Consoles • 2023**  
Steve Struhs 631-293-4068  
Technical Furniture for Broadcast/AV
- Technical Broadcast Solutions, Inc. • 2018**  
Robert Russell 302-414-0055  
Engineering and Consulting Services
- Telestream • 2013**  
Bryn McFadden 530-470-1300  
Video and Workflow Solutions
- Televs USA, LLC • 2021**  
Andy Ruffin 937-475-7255  
Antennas Transmitters Measurement Distribution
- Telos Systems/Omnia/Axia • 2003**  
John Bisset 216-241-7225  
Talk-Show Systems
- Teradek • 2011**  
Jon Landman 949-743-5783  
Camera-top ENG Solutions
- Texas Association of Broadcasters • 2024**  
Sydney Haisler Herrmann 512-322-9944  
Texas Association for Radio & TV Broadcasters
- Tieline The Codec Company • 2003**  
Dawn Shewmaker or Jacob Daniluck 317-845-8000  
Audio Codec Manufacturer
- Unimar Inc. • 2001**  
Thad Fink 315-699-4400 813-943-4322  
Tower Obstruction Lighting Designer, Manufacturer, Distributor
- Wheatstone • 2010**  
Jay Tyler 252-638-7000  
IP Consoles, Routers & Processors
- WideOrbit • 2012**  
Brad Young 415-675-6700  
Radio Automation and Playout
- Wisconsin Broadcasters Association • 2024**  
Michelle Vetterkind 608-255-2600  
Wisconsin Association for Radio & TV Broadcasters

## NEW SUSTAINING MEMBERS



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# Member Spotlight: Dustin Hapli

## Member Stats

**SBE Member Since:** 2014

**Employer:** EQ Office - Willis Tower

**Position:** Broadcast Manager

**Location:** Chicago, IL

**Chapter:** 26 Chicago

**I'm Best Known For:** Making things happen in a pinch, even when there's a hurricane outside.

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

**A.** The comradery between the various generations of engineers and all the great stories from over the years.

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

**A.** When I was very young my parents would play shows from the golden age of radio to entertain me. This ignited a lifelong passion for radio and broadcasting.

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

**A.** Mike O'Shea was the chief engineer of WUSF-FM in Tampa for more than 40 years. He taught me a lot about transmitters and gave me the tools to become a chief myself.

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

**A.** Every day is a new and different challenge. You're never bored!



Dustin standing in front of the antennas on the Willis Tower rooftop in downtown Chicago.

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

**A.** ...can often be found at concerts with my wife. We love Flogging Molly and Michael Franti, among others, and always go to see them when they're nearby.

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

**A.** My first "real" job was as a carnival worker at the Illinois State Fair. A few months later I got my first radio job after answering a classified ad in the local newspaper. I was a board op (producer today) for WTAX-AM in Springfield, IL, when I was still in high school. I mostly played the local commercials for sports broadcasts. This was in the days of carts before full-scale automation took over.

**Q.** *What's your favorite gadget?*

**A.** I've been really impressed with the RodeCaster mixer. Add some Blackmagic cameras and you can do almost anything from anywhere.

**Q.** *Do you have a nickname?*

**A.** Most of my friends call me Hap. 

## SBE Sustaining Members Providing Prizes

### Sunday

SBE Booth Drawing \$200 Amazon Gift Card Give-away, sponsored by Nema Electronics

### Monday

SBE Membership Meeting

The first 125 people in attendance receive an SBE-logoed 60<sup>th</sup> anniversary poke chip courtesy of Blackmagic Design

SBE Booth Drawing \$200 Amazon Gift Card Give-away, sponsored by

Linkup Communications

Blackmagic Design Two Micro Camera 4K G2

SBE Member Reception

Multiple gift cards and prizes

### Tuesday

SBE Booth Drawing \$200 Amazon Gift Card Give-away, sponsored by Blackmagic Design

## SBE Booth and Hours

Booth W4132

Sunday: 10 a.m. - 5:30 p.m.


Monday: 9 a.m. - 6 p.m.

Tuesday: 9 a.m. - 6 p.m.









Wednesday: 9 a.m. - 2 p.m.

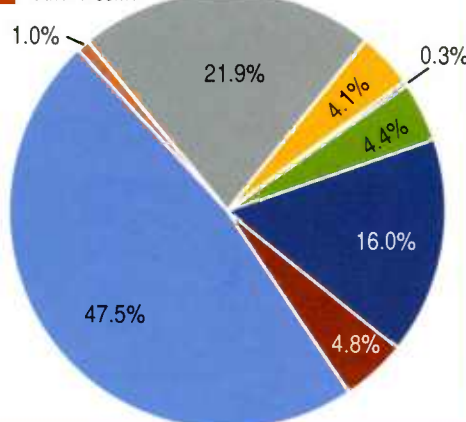
## 2023 Finances in Review

The Society of Broadcast Engineers, Inc. completed 2023 with net revenue from all operations of \$48,898. Gross income from all sources was \$1,380,526, while expenses were \$1,331,628. The value of SBE savings and investments as of Dec. 31, 2023, were \$1,538,010. Total SBE assets as of Dec. 31, 2023 were \$1,549,932. Long-term invest-








ment gain totaled \$70,599. A percentage breakdown of SBE income from program operations and expenses is depicted in the accompanying charts. A financial statement will be published in the June issue of *The Signal*, following the completion of the Society's annual financial audit. 

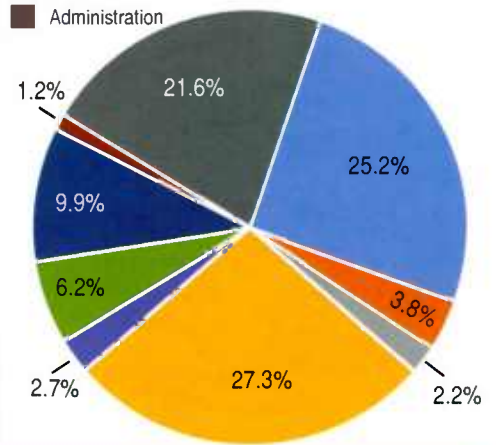
### Income

-  Frequency Coordination
-  Publications/Advertising (non-Cert)
-  Membership Dues
-  Sustaining Member Dues
-  National Meeting
-  Certification
-  Education
-  Other Income



### Expenses

-  Frequency Coordination
-  Communications w/ Members
-  Chapter Rebates
-  Member Services
-  National Meeting
-  Certification
-  Education
-  Depreciation
-  Administration





## SBE Events @ the NAB Show

Friday, April 14

### SBE Ennes Workshop @ the NAB Show

Register at [NABShow.com](http://NABShow.com)  
8:30 a.m. - 6 p.m.  
LVCC W219 and W225

Saturday, April 15

### SBE Ennes Workshop @ the NAB Show

8:30 a.m. - 5:30 p.m.  
LVCC W219 and W225

### SBE Board of Directors Meeting

6 p.m. - 9 p.m. • LVCC W227

Sunday, April 16

### SBE Booth Drawing

5 p.m. • SBE Booth W4132, sponsored by Nema Electronics

Monday, April 17

### SBE Membership Meeting

5 - 6 p.m. • LVCC W221  
SBE Booth Drawing, sponsored by Linkup Communications

### SBE Member Reception

6:15 - 7:15 p.m. • LVCC W213

Tuesday, April 18

### SBE Certification Exam Session

Advance registration required  
9 a.m. - noon • LVCC W206

### SBE Booth Drawing

5 p.m. • SBE Booth W4132, sponsored by Blackmagic Design

# Still Time to Renew Your SBE Membership

It is still not too late to renew your membership in the Society of Broadcast Engineers and retain your membership benefits. If you are a Member, Senior, Student, Associate or Fellow member, you may renew online at [sbe.org](http://sbe.org). Click on "Renew Membership" in the upper right-hand corner of the website home page (or the hamburger drop-down menu on a mobile device). The online system is available 24/7, is secure, and accepts Visa, MasterCard and American Express. The system automatically generates a receipt, sent to your email address. You will need your member number and website password to access the renewal system, but if you don't have them handy, there is an automated retrieval system available to you on the renewal page.

When renewing, consider joining more than 1,000 fellow SBE members who have chosen the SBE MemberPlus option over the past year. For \$175, the SBE MemberPlus option provides all of the benefits of traditional membership, plus access to all archived SBE webinars and all new SBE webinars produced through March 31, 2025. That's more than 100 webinars covering a broad range of broadcast/media technology, regulatory and safety topics.

You may also renew your membership by mail, completing and returning the renewal form and your payment to the SBE national office: Society of Broadcast Engineers; 9102 N. Meridian Street, Suite 150; Indianapolis, IN 46260; or by fax at 317-846-9120.

### Traditional and MemberPlus Members

Membership renewal was due April 1. SBE By-laws provides for a three-month grace period (extends through June 30). If you chose the SBE MemberPlus option in 2023 and you did not renew by April 1, be aware that your SBE MemberPlus option benefits ended on April 1, 2024, and your membership was automatically converted to traditional membership for the duration of the grace period. If you renew during the grace period (or after), you can restore your free access to all SBE webinars by taking the SBE MemberPlus option.



[sbe.org/renew](http://sbe.org/renew)

Don't forget to recruit a new SBE member while you're renewing your own membership.



# WELCOME TO THE SBE

## NEW MEMBERS

Donald I. Adams - Portales, NM  
Timur Aliyev - Tashkent, Uzbekistan  
Ayodele A. Arowolo - Miami, FL  
Herbert E. Ayer - Bangor, ME  
Thomas Balogh - Youngstown, OH  
Michael A. Borschow - Dallas, TX  
Christopher R. Brown - Lehigh Acres, FL  
Sarah E. Buford - Little Rock, AR  
Steve L. Carter - Aurora, CO  
Briam D. Carter - Winterport, ME  
Yoon Kyung Cho - Elmhurst, NY  
Briam Clark - Kissimmee, FL  
Drew J. Darrow - Middlebury, VT  
Peter A. Day - Yellow Springs, OH  
Leon S. Dixon - Columbia, SC  
Dante S. Donceras - Mississauga, ON  
Michael Duangdara - Midlothian, VA  
Gordon S. Eaton - Sweden, ME  
Kevin L. Elliott - Rives, TN  
David A. Farrar - Greenville, RI  
Sebastian P. Franitza - Fort Wayne, IN  
Brett M. Gibson - Suring, WI  
Marvin T. Graham - Blythewood, SC  
Anthony Green - Nashville, TN  
Edmund L. Hatch - Woodbridge, VA  
Jason N. Hney - Osceola, IN  
Charles S. Huizenga - Grand Rapids, MI  
Derek R. Keener - Myerstown, PA  
Casey Keyworth - Owings Mills, MD

Keith Kunz - Philadelphia, PA  
Jean Philippe Lesperance - East Point, GA  
Richard G. Magnaye - Bergenfield, NJ  
John Melton - Coral Springs, FL  
Jody Nielsen - Milwaukee, WI  
Phillip D. Packard - North Platte, NE  
Frank V. Pestana - North Bergen, NJ  
Nathan S. Pooler - Cedar Park, TX  
Joshua J. Reyes - Colorado Springs, CO  
Jerry Rose - Portales, NM  
Paul Schatz - Sacramento, CA  
Jeffery D. Scheffe - New Bern, NC  
Nauwroz Khan Shaik Fazaluddin - Singapore, Singapore  
Jonathan Sharp - Fort Myers, FL  
David M. Smith - Pinedale, WY  
Ray Smith - Cope, SC  
William Staffan - Cincinnati, OH  
Curtis M. Stefan - Morgantown, WV  
Lendl D. Timm - Kingstown, St. Vincent  
Earon M. Varner - Canton, GA  
Marcus J. Wilborn - O'Fallon, IL  
Andrew J. Williams - Kalamazoo, MI  
Shane A. Williams - Denver, CO  
Tom Winkle - New Braunfels, TX  
Fatih Yanik - Honolulu, HI  
Matthew T. Young - Memphis, TN

## RETURNING MEMBERS

Ted J. Alexander III - Chagrin Falls, OH  
Ry Alford - Flowery Branch, GA  
Aaron Boling - Soth Bend, in  
Juan M. Cervantes - Ramona, CA  
Shea Clark - Clearwater, FL  
Don J. Danko - Maineville, OH  
William M. DeFelice - Monroe, CT  
Gina L. Dierks - Omaha, NE  
Michael E. Fields - Oklahoma City, OK  
Michael Hernandez - Miami, FL  
Joshua J. Heymig - Indianapolis, IN  
Emery J. Hudson - Oakland, CA  
Adam Johnson - Asheville, NC  
Byron J. Johnson - Waterloo, IA  
Brian M. Jones - Oakton, VA  
Sean P. Koning - Ijamsville, MD  
Romika Kowalski - Gilbert, AZ

### NEW ASSOCIATE MEMBERS

Polly Johnson - Baton Rouge, LA

### RETURNING STUDENT MEMBERS

Michael J. Ventrice - Valhalla, NY

### RETURNING ASSOCIATE MEMBERS

Dale S. Ladner - Casco, ME

Wayne M. Kube - Lucas, TX  
Sergey N. Kurakin - Orlando, FL  
Jay S. Martin - Raymond, ME  
James B. Moore - Cedar City, UT  
Chris T. Prewitt - Kansas City, MO  
Nicholas A. Slade - Ottawa, ON  
Ben Slater - Laramie, WY  
Scott Solko - Boynton Beach, FL  
Chuck E. Stanley - Raleigh, NC  
Mark D. Toub - Perkasie, PA

### NEW STUDENT MEMBERS

Ethan X. Adeniran - Freeport, NY  
Kevin J. Bleck - Newport, NC  
Jason Eusebio - North Baldwin, NY  
Amanda M. Grimes - Hempstead, NY  
Eleanor L. Heaton - Rochester, NY  
Shre Aswin Satyanarayanan - Unionville, CT

## In Memoriam

Wilson L. Brown - San Antonio, TX  
Carl D. Craver - Buena Park, CA  
Jeff T. Crews - Lake Wales, FL  
Robert J. Haduch - Pittston, PA  
Nicholas R. Marasco - Chittenango, NY  
Terry K. Reynolds - Eagle River, AK  
Gregory I. Schmitke - Fargo, ND



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## MEMBERS ON THE MOVE



◀ **David Antoine**, CBRE, CBNT, has joined Broadcasters General Store as a sales engineer. He is based in New York City.

▶ **Kira Holden**, CTO, is newscast director at WDAF-TV, Kansas City.



◀ **Ted Nahil**, CPBE, is US sales rep at 2wcom Systems. He is based in Port St. Lucie, FL.



Send your news to Chriss Scherer at [cscherer@sbe.org](mailto:cscherer@sbe.org).

## MARK YOUR CALENDAR

S M T W T F S

**SBE Ennes Workshop @ the 2024 NAB Show**  
Las Vegas  
April 12-13, 2024 [sbe.org/ennes\\_workshop](http://sbe.org/ennes_workshop)  
**2024 NAB Show**  
Las Vegas  
April 13-17, 2024 [nabshow.com](http://nabshow.com)  
**SBE Membership Meeting & Reception**  
NAB Show  
April 15, 2024  
**SBE WEBxtra** *online*  
April 22, 2024 [sbe.org/webxtra](http://sbe.org/webxtra)  
**SBE WEBxtra** *online*  
May 20, 2024 [sbe.org/webxtra](http://sbe.org/webxtra)  
**SBE Membership Drive Ends**

**SBE WEBxtra** *online*  
July 8, 2024 [sbe.org/webxtra](http://sbe.org/webxtra)  
**SBE Leadership Development Course** *Atlanta*  
Aug. 7-9, 2024 [sbe.org/ldc](http://sbe.org/ldc)  
**SBE Certification Exams** *Local Chapters*  
Aug. 2-12, 2024 [sbe.org/certification](http://sbe.org/certification)  
*Application deadline June 14, 2024*  
**SBE Election Ends**  
Aug. 7, 2024 [sbe.org](http://sbe.org)  
**SBE WEBxtra** *online*  
Aug. 19, 2024 [sbe.org/webxtra](http://sbe.org/webxtra)  
**SBE WEBxtra** *online*  
Sept. 23, 2024 [sbe.org/webxtra](http://sbe.org/webxtra)



**SBE Awards Nominations Deadline**  
June 17, 2024 [sbe.org/awards](http://sbe.org/awards) Sept. 10-11, 2024 [wi-broadcasters.org](http://wi-broadcasters.org)

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