



SBE Events Abound at the 2015 NAB Show

With the NAB Show just days away, be sure you include the many SBE events on your convention calendar. While the Ennes Workshop kick starts the convention on Saturday, the highlight for SBE members is the annual Membership Meeting, which will be followed by a reception. The Membership Meeting will be held on Tuesday, April 14, at 6 p.m. in room S228. The Membership Meeting brings you up to date on all the SBE activities and programs, and it includes a recognition of SBE chapter certification chairmen who have achieved milestone service years, and updates on implementation of the society's strategic



Add the SBE Membership Meeting to your calendar.

plan, programs and government relations efforts. Everyone attending will be eligible to win prizes, including a Blackmagic Design Studio Camera (courtesy of the Membership

Meeting sponsor Blackmagic Design), a \$300 gift card for Fry's Electronics, restaurant gift cards and SBE beverage tumblers.

You'll want to be one of the first in line as well, because the first 150 people at the meeting will receive an SBE-logoed USB plug-in charger.

The Membership Reception starts immediately after the meeting at 7 p.m. also in room S228. There will be light snacks and drinks available. The SBE thanks the Sustaining Member sponsors of the Membership Reception for their support in making the reception possible:

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There will also be a prize drawing at the reception. Five Fire HD 7 tablets will be



Members enjoying the reception at the 2014 NAB Show

given away, courtesy of Emerson.

Check the complete event schedule on page 8 of this issue. You'll find listings for several committee meetings, the board of directors meeting, SBE certification exams, and the daily booth prize drawing.

See you in Las Vegas.

Ennes Workshop Kicks off NAB Show Tech Program

By Fred Baumgartner, CPBE, CBNT, Trustee, Ennes Educational Trust

On Saturday April 11, The Ennes Educational Foundation Trust will present its 20th program at the NAB Show in room S219. Over the years, the popularity of the program has grown, attracting more than 300 broadcast engineers for the day-long, largely tutorial program. Attendance requires a full NAB registration, and SBE members receive a partner discount. PBS Techcon and PREC attendees can attend with their badges.

Every year, we tackle the topic broadcast engineers most need to know. This year, we look at the "All IP Facility." It seems inevitable that BNC, XLR and other connectors, as well as the linear, dedicated, real-time content connections they represent, will fade away in favor of the ubiquitous Ethernet connection. Everything we do in real-time or content transfer and transmission seems destined to be imbedded in

some form of IP, along with all the ancillary control, monitoring, synchronization, and information functions. What isn't virtualized will reside on hardware with essentially only that Ethernet connection, and the wiring scheme will simply be to connect to a software-defined network. This is a profoundly different kind of media facility – and it's becoming real quickly.

The Day's Plan

For some time, we have started the day early with a basic tutorial. This will be our longest, deepest, and most unique. Wayne Pecena will build an IP network from scratch, troubleshoot it, optimize it, manage it, and all along the way teaching us how to use what tools and procedures, when and where. It's impossible in a few sentences to explain just who Wayne is

and what role he has played with Ennes, the SBE's educational efforts, PBS, and others. He has been widely recognized as a teacher's teacher, and if you haven't been a student of Wayne's, let me say simply that the

see [ENNES WORKSHOP](#), p.9

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

Membership Drive in Full Swing

Recruit a new member and help someone get the SBE Advantage

In 2014, the Society of Broadcast Engineers celebrated its 50th anniversary. While the society was founded to serve the needs of our members, it's members like you who keep the society going.

As an SBE member, you already know the benefits of membership. Through educational programs, industry representation, legislative efforts, frequency coordination, career services and of course the most-respected certification program, SBE membership offers many advantages.

Chances are you know someone who could also benefit from being an SBE member. Perhaps you know someone who frequently attends your chapter meetings, but has not joined. We're asking for your help in showing your colleagues the advantages of SBE membership, and if you recruit him or her during the Membership Drive, which runs until May 31, not only will the new member get the SBE advantage, you, as the recruiter, will benefit as well.

For every new member you recruit during the Membership Drive by having the new recruit list you as the sponsor on the new-member application, you will receive \$5 off your 2016 dues, up to \$25. In addition, your name will be entered into the membership prize drawing for items that have been donated by SBE Sustaining Members, affiliated book publishers and the SBE. You receive one entry for each new, full dues-paying individual member you

sponsor. And for each Sustaining Member you recruit you'll receive five entries.

The grand prize winner will be awarded a trip and full registration to the SBE National Meeting, held in conjunction with the Wisconsin Broadcasters Clinic, hosted by the Wisconsin Broadcasters Association and Wisconsin SBE chapters, in Middleton, WI, Oct. 13 - 15, 2015.

The prize package includes round-trip airfare for one, two nights stay at the Madison Marriott West, and free admission to all national meeting and Clinic events.

Other prizes include two Tascam DR-05 recorders courtesy of BSW; a Comrex BRIC-Link II courtesy of Comrex; an FM-55 digital audio signal processor courtesy of Wheatstone; four Maine lobster sets courtesy of Dielectric; a barbecue set courtesy of Tieline, a variety of shirts from Dielectric, DVEO, Heartland Video, and Tieline; glasses or mugs from Heartland Video and the SBE; attendance to an SBE University online course; a copy of SBE CertPreview; and more.

Two SBE chapters will be presented Golden Recruiter Awards at the end of the drive. This recognizes a chapter, one each in the large and small chapter size divisions, that has the highest percentage of current SBE members participating in the Membership Drive. Participation is defined as recruiting one or more new members.

Help your colleagues get the advantage. Recruit them to join the SBE.



Renew Your Membership

The SBE dues renewal notices were mailed to Members, Senior Members, Fellow Members, Associate Members and Student Members in February, and you should have received yours by now. You can renew online at sbe.org, or return the renewal form by mail or fax. Renewing online is quick, easy and secure, and it's available 24/7.

If you're heading to the NAB Show, you can also renew your membership at the SBE booth, L30, which is at the north end of the South Hall upper lobby. The SBE booth hours are listed on page 8.

Questions about renewal, or perhaps

you haven't seen your renewal notice yet? Contact Scott Jones at the SBE National Office at 317-846-9000 or kjones@sbe.org.

Don't lose the benefits of SBE membership. Renew today.



Certification Question

Answer on page 6

A transistor circuit that can match a high impedance to a low impedance load is a:

- A. common collector
- B. common emitter
- C. common grid
- D. common base



LETTER FROM THE PRESIDENT

By Joe Snelson, CPBE, 8-VSB
SBE President
jsnelson@sbe.org

The Experience That Counts as Education

It's hard for me to believe that the NAB Broadcast Engineering Conference (BEC) is just around the corner. By the time you receive this edition of *The Signal* the NAB Show will be just days away.

The NAB Show has always been an exciting time for me, as I'm sure it is for you if you have attended the show in the past. For me, this will be my 33rd consecutive show and a total of around 40! I recall my first NAB Show being in Chicago in a hotel conference facility. Yes, that was the same place where Ampex introduced its first commercial quadruplex video recorder in the late 1950s. And, no, I wasn't there for that. I'm not that old.

Through my years of attending the NAB Show I can recall a couple of introductions to new technology that were very impressive for me as a young engineer in this business. The first that I recall was one of the first solid-state frame synchronizers introduced by NEC around 1973. We don't think much about that today as they are ubiquitous and relatively inexpensive. The first one I saw occupied a full-height equipment rack and cost around \$65,000! Nonetheless, it was impressive considering the current analog technology only yielded about 6.3% of a video line of correction versus a full frame. A few years later I worked vacation relief at ABC in Hollywood where they had two of these frame synchronizers in operation. But I saw it first, however, at an NAB convention.

One of the other major technological innovations I saw some years later at the NAB Show was the introduction of a solid-state imaging color camera. Again, many don't think much about it now, but some of us remember the hours we spent "registering" color cameras, and we well recall one could never get it perfect. Don't know what I mean by registering a camera? I am not talking about filing paperwork of ownership with a vendor or government agency. I am

talking about overlaying the red and blue images over the green as to not have what we called the "comic strip" effect in the picture. Funny, that technique is sometimes used for special effects in television production using digital effects units. We used to get that effect for free when the cameras were fired up first thing in the morning. Honestly, I don't miss those days, and I am glad to see technology evolve. Again, I saw this technology in action at the NAB Show.

From Experience

Here is why I gave the previous examples. I have always considered the NAB Show a part of my continuing education. This is where the broadcast and multimedia engineer has the opportunity to view first hand new technology and/or improvements on current technology. If you are able to obtain full registration for the show, there are technical papers presented covering radio, television, multimedia and more. That brings me to my next point about the NAB Show that involves the SBE.

As you know, the SBE is proud to partner with the NAB in putting together the Broadcast Engineering Conference. In fact, the majority of those that made up the planning committee for the BEC this year are SBE members. This is the committee that evaluates the abstracts of papers and selects those to be given at the conference.

One of the notable sessions, as always during the BEC, is the all-day Saturday SBE Ennes Workshop that is put together by SBE member Fred Baumgartner, CPBE, CBNT. This is a well-attended event and I encourage you to attend. It's worth arriving earlier to the convention.

The SBE booth will be in the same loca-

tion as it was last year, which is on the northern end of the second floor of the South Hall near the escalators. Be sure to stop by and say hello. And don't forget to attend our Membership Meeting, which will be held in South Hall meeting room S228. The meeting will begin at 6 p.m. on Tuesday, which is when the exhibits close for the day. Immediately following the membership meeting we will hold a reception in the same room. This will be a great opportunity to visit with colleagues for a time of refreshments and fellowship.

Looking back over the first couple of months of the year, the SBE made available three new educational webinars. On February 4 Alan Jurison of iHeartMEDIA presented a webinar on HD Radio Advancements and Trends. This webinar was made available for free to SBE members. I am pleased to report that we had more than 160 attendees for this webinar. If you missed it live you can still view the webinar by going to the SBE website and clicking on the education tab, then go to the On-Demand Webinars section. This webinar is free to SBE members courtesy of iBiquity Digital, who sponsored this event.

The second webinar, held on February 19, covered ATSC 3.0 and was presented by Dr. Richard Chernock, chief science officer at Triveni Digital. We had more than 56 attendees at this webinar. This webinar is a must for television engineers who have heard of ATSC 3.0 but are not aware of all the benefits the standard will offer. This webinar has also been archived and is also available on the SBE website (same location mentioned above) at a modest cost to SBE members.

I will also mention that the goal of our Education Committee is to make even more webinars available to our members this year. So, stay tuned!

April will be a busy month for many with the NAB Show upon us. If you are able to attend this year please don't forget our membership meeting on Tuesday followed by a reception. And do stop by the SBE booth and say hello.



Various solid-state imaging devices



A 1974 ad for the NEC FS-10 frame synchronizer. Image courtesy of AmericanRadioHistory.com.



EDUCATION UPDATE

By Wayne Pecena, CPBE, AMD, DRB, 8-VSB, CBNE
Chairman, SBE Education Committee
w-pecena@tamu.edu

Don't Overlook Self Education

As this issue of *The Signal* reaches your mailbox, I hope you are beginning to pack your bag for a trip to Las Vegas for the 2015 Ennes Workshop and a week of the NAB Show. You can look forward to an event-filled week, and the Ennes Workshop offers a great way to start it. As you have probably seen, the Ennes Workshop will focus upon the IP-based broadcast facility. Presentations will range from the practical aspects of building an IP network, to the advanced, cutting-edge technology such as software-defined networking. The IT world is well engrained into the modern broadcast plant and IT knowledge has become a necessary skill and knowledge area for the broadcast engineer.

But, what if you are unable to attend the Ennes Workshop and the NAB Show this year? How do you keep up with ever-changing technology, and especially that of the IT industry as applied to the broadcast facility? I offer some thoughts regarding self-education and guiding your own professional development study program.

Self-education is an important part of one's ongoing education. Your ongoing education program can be as simple as reading the many trade publications, and of course the Internet offers a wide range of resources. Some may be more valuable than others, but there is not a lack of information. Here are some recommendations for the broadcast engineer in regards to a self-directed professional development program with minimal cost involved.

A couple of Focal Press books first come to mind as appropriate primers to the IP based broadcast technical facility. *Audio Over IP: Building Pro AoIP Systems with Livewire* (Steve Church and Skip Pizzi, Focal Press 2010) offers a great overview of the IP networking technology behind the Livewire system. You can also expect some specifics related to the Axia Audio products, but this text offers a great foundation in the basics of IP networking as well as the more advanced multicast technology that most AoIP systems are based upon.

For the TV broadcast engineer, *Planning and Designing the IP Broadcast Facility* (Gary Olson, Focal Press 2015) offers a wide range of topics and considerations for the TV broadcast plant migration to an IP-based facility. Content workflow receives a significant amount of attention and is likely the most important design aspect in the IP facility.

But, what about some basic IP networking knowledge? The Internet offers a world of resources in this knowledge area. A challenge might be more focused of choosing the right content rather than finding the content. Many resources are focused upon obtaining various levels of Cisco certifications. Certainly valuable information can be found if you operate in a Cisco environment, but if you don't, there is still value in the basic concepts. Some specific sources: Search on YouTube for Keith Barker (Keith6783), and you will find numerous 10-12 minute videos regarding about every aspect of IP networking. Many are Cisco-focused in terms of implementation examples, but Keith offers a wealth of knowledge for only the cost of your Internet connection. Another excellent resource are the guides offered by RouterAlley (RouterAlley.com). Aaron Balchunas offers some excellent study guides focused upon Cisco certifications self-study, but also provides some great

to-the-point IP networking knowledge.

And of course, your SBE offers numerous online webinars and SBE University classes on IP networking and numerous broadcast engineering topics. I hope to see you in April at the Ennes Workshop and the NAB Show, but if you are not able to attend, don't overlook the many resources available to you to continue your own professional development.

Bring an Ennes Workshop to Your Chapter in 2015

Now is the time to book your Regional Ennes Workshop for your SBE chapter or regional conference before the 2015 slots are filled. Don't let this opportunity slip away. Contact Kristin Owens at the National SBE office for further information and to schedule a regional Ennes Workshop at your next SBE event in 2015.

Remember, learning is a continuous process for the technology professional and certainly the broadcast engineer. Continuous learning is a key trait of the successful technology professional and the SBE Education Committee is at work to bring you quality professional development programs covering timely industry topics and delivered in several media!



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For more information on any SBE education program, contact Education Director Kristin Owens: kowens@sbe.org or 317-846-9000.



CERTIFICATION UPDATE

By Megan Clappe
SBE Certification Director
mclappe@sbe.org

A Timeline of SBE Certification

2015 marks the 40th anniversary of the SBE Program of Certification

A lot can happen in 40 years. The SBE Program of Certification celebrates this milestone in 2015. To illustrate how the program came to where it is now, we assembled this timeline of events in the program's history.

- 1971**
 - SBE membership stands at 1,249 with 19 chapters
 - Endorsements to FCC First Class License considered
- 1972**
 - Broadcast Engineer's License discussed; would include experience record
- 1973**
 - Ben Wolfe creates first tests
- 1975**
 - April: NAB Convention: A New Broadcast License Certification Program panel presented by Ben Wolfe, Jim Wulliman and John Wilner
 - November 13: Board of Directors accept final draft of Certification Program
- 1979**
 - 1,500 Certifications issued
- 1981**
 - FCC First Class License eliminated
- 1987**
 - Certified Professional Broadcast Engineer added, includes 20-year experience requirement
- 1992**
 - Employer letter option added
 - First exams in Spanish
 - The SBE *Signal* lists Certification accomplishments
- 1993**
 - Radio Operator Handbook* and certification available
 - Official abbreviations created (CBT, CBRE, CBTE, CSRE, CSTE and CPBE)
 - Computer-based practice tests created
- 1996**
 - Audio and Video Engineer levels created (CEA, CEV)
- 1997**
 - First CEA and CEV tests administered
- 1999**
 - Computer-based practice tests updated
 - Private proctoring created
 - Multiple essays offered
- 2000**
 - CBNT created
- 2003**
 - SBE Certification Program recognized by the National Skill Standards Board (NSSB)
- 2004**
 - CertPreview launched
- 2005**
 - July: CBNT reaches 1,000 certified
 - June: AM Directional Specialist introduced
 - December: 8-VSB Specialist introduced
- 2006**
 - Certifications are trademark registered
- 2007**
 - October: Digital Radio Broadcast Specialist introduced
- 2009**
 - SBE CertPreview v. 2 unveiled
 - 7th edition of *Certified Television Operators Handbook* released
- 2010**
 - SBE Certified logo introduced
- 2012**
 - July: CBNE introduced
 - CRO and CTO handbooks available in digital form through Barnes and Noble and Amazon
- 2014**
 - Handbook for Radio Operators* 2nd ed. released

Certification Chairmen

Jim Wulliman	1975-1996
David Carr	1996-1998
Terry Baun	1998-2001
Chriss Scherer	2001-2005
Jim Bernier	2005-2013
Ralph Hogan	2013-present

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Answer from page 3

A. common collector

A common collector amplifier has a voltage gain of 1, but a high current gain. Its high input impedance (typically 100kΩ or more) and low output impedance (typically 50Ω or so) make it ideal as an impedance matcher. It is often also called a buffer amplifier.

SBE Certification Achievements

CONGRATULATIONS

LIFE CERTIFICATION	Certified Professional Broadcast Engineer® (CPBE®) David Davis, Arlington, TX – Chapter 67 Robert S. McNeal, Colleyville, TX – Chapter 67	Certified Broadcast Radio Television Engineer™ (CB RTE) Richard Garofalo, Park Ridge, IL – Chapter 26	Certified Broadcast Network Technologist® (CBNT®) David Davis, Arlington, TX – Chapter 67
NEWLY CERTIFIED CPBE®	Kenny Elcock, Honolulu, HI – Chapter 63	Marlin Jackson, Spokane, WA – Chapter 16 Wayne Murphy, Murrieta, CA – Chapter 131	Tony Peterle, Miami, FL – Chapter 53
NOVEMBER EXAMS	8-VSB Specialist™ (8-VSB™) Mark Pace, Carrollton, IL – Chapter 55f		
FEBRUARY EXAMS	Certified Broadcast Radio Engineer™ (CBRE®) Clayton Heeren, Sioux Falls, SD – Chapter 74 Timothy Helmecki, Bristol, CT – Chapter 14 Steven Mena, West Sacramento, CA – Chapter 43 Scott Solko, Panama City Beach, FL – Chapter 7 Certified Broadcast Television Engineer™ (CBTE®) Jeremy Baker, Mount Holly Springs, PA – Chapter 41 Damion Giunta, Centennial, CO – Chapter 48 Robert Henry, Albuquerque, NM – Chapter 38 Gabriel Rosas, Inglewood, CA – Chapter 47 Certified Broadcast Technologist® (CBT™) David Jones, Angola, IN – Chapter 91 Jason Quinn, Albuquerque, NM – Chapter 38	Certified Broadcast Networking Technologist® (CBNT®) Sheryl Bowin, Galion, OH – Chapter 52 William Bowin, Galion, OH – Chapter 52 Thomas Fisher, Henrico, VA – Chapter 60 Craig Holderbaum, Ithaca, NY – Chapter 140 Troy Majeska, La Mirada, CA – Chapter 47 Nigel North, Pasadena, MD – Chapter 37 Leonard Rivers, Lancaster, CA – Chapter 47 Marisabel Santana, Laurel, MD – Chapter 37 Steven Thompson, Conroe, TX – Chapter 105 Certified Radio Operator® (CRO®) Nick Anziovlar, Carpentersville, IL – Chapter 26	Certified Television Operator® (CTO®) Tom Bole, Las Vegas, NV – Chapter 128 Michael DeLuca, Wethersfield, CT – Chapter 14 Mark Chesterton, Vineland, NJ – Chapter 18 Cori Fong, Los Angeles, CA – Chapter 47 Behnam Ghahramani, Los Angeles, CA – Chapter 47 Marquis McCants, Baltimore, MD – Chapter 37 Gerrit Marshall, Madison, WI – Chapter 24 Melanie Meixner, Madison, WI – Chapter 24 Brandon McKinney, Saint Peters, MO – Chapter 55 Sam Sanchez, Oxnard, CA – Chapter 47 Walter Streeter, Mishawaka, IN – Chapter 30 Craig Wood, Madison, WI – Chapter 24
SPECIAL-PROCTORED EXAMS	Certified Senior Television Engineer™ (CSTE®) Kenneth Scott, Seattle, WA – Chapter 16 Certified Broadcast Television Engineer™ (CBTE®) Roland Robinson, Tacoma, Wash. – Chapter 16	Certified Broadcast Technologist® (CBT®) Rodney Freed, Martin, TN	Alabama Broadcasters Association Certified Broadcast Technologist® (CBT®) E. Len Doughty, Norman, AR – Chapter 44 Geoffrey Peacock, Mobile, AL
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RECERTIFICATION	Certified Professional Broadcast Engineer® (CPBE®) Ron Comben, North York, ON Gregory Dahl, Rockford, IL – Chapter 96 Frederick Engel, Lexington, KY – Chapter 35 Chris Heck, Eugene, OR – Chapter 76 Certified Senior Radio Engineer™ (CSRE®) Ron Thompson, Long Beach, CA – Chapter 47 Certified Senior Television Engineer™ (CSTE®) Michael Gianutsos, Lower Burrell, PA – Chapter 20 Certified Broadcast Radio Television Engineer™ (CB RTE™) Jon Bennett, College Station, TX – Chapter 99 Certified Broadcast Radio Engineer™ (CBRE®) Aaron Bonto, Hagatna, Guam – Chapter 126 Jon Kenneke, Albany, OR – Chapter 76 Marcos O'Rourke, Santa Ana, CA – Chapter 47 Certified Video Engineer® (CEV®) Matthew Grossman, Oak Ridge, NJ – Chapter 15	Certified Broadcast Television Engineer™ (CBTE®) Mark Brown, Post Falls, ID – Chapter 47 Kurt Caruthers, Overland Park, KS – Chapter 59 Edward Hinch, Croton On Hudson, NY – Chapter 15 James Kelly, Vancouver, WA – Chapter 124 Brian Kerkan, Harrison Township, MI – Chapter 120 Terry Johnson, Charlotte, NC – Chapter 45 William Mooney, Bigelow, AR Ralph Shider, Lancaster, OH – Chapter 52 Chris Thomas, Seattle, WA – Chapter 16 Certified Broadcast Networking Technologist® (CBNT®) Jonathan Abrams, Jersey City, NJ – Chapter 15 Ron Comben, North York, ON Timothy Davis, Fort Worth, TX – Chapter 67 Brian Kerkan, Harrison Township, MI – Chapter 120 Jerry Manes, Marbleton, GA – Chapter 5 John Mazza, Pasco, WA – Chapter 51 Urban Stiess, Los Angeles, CA – Chapter 47 Michael Zurbrick, Rowlett, TX – Chapter 67	Certified Broadcast Technologist® (CBT®) Keith Borgstrom, Lyme, NH – Chapter 110 Kenneth Colwell, Davenport, IA – Chapter 65 Todd Hauser, South Beloit, IL – Chapter 24 Joel Humke, Centennial, CO – Chapter 48 Matthew Johnston, Lake, MI James Kelly, Vancouver, WA – Chapter 124 Keane Laguatan, Medford, OR – Chapter 141 Francine Maness, San Antonio, TX – Chapter 69 Nathan Miller, Albuquerque, NM – Chapter 34 Jason Royals, Grass Valley, CA – Chapter 69 Mark Thorsell, Walnut Creek, CA – Chapter 40 Certified Television Operator® (CTO®) Erick Huezio, Upland, CA Karl Parker, Portland, OR Daniel Wong, Los Angeles, CA

National Elections Ahead: Have You Considered Running?

The national SBE Nominations Committee is looking for capable leaders interested in serving on the national board of directors. Candidates must hold Member, Senior, Life, or Fellow membership status, or be the official representative of an SBE Sustaining Member. All candidates must hold an engineering level certification from the SBE (CBT or higher, or CBNE), and if elected, maintain the certification, as well as membership, throughout their terms.

Directors serve two-year terms and are

expected to attend two full meetings of the board each year; in the spring during the NAB Show, and in the fall during the SBE National Meeting. Terms of officers are one year. Officers are expected to attend the two full meetings of the board plus two meetings of the executive committee, held each year in January and June.

If you're interested in running, contact Ted Hand, CPBE, 8-VSB, AMD, DRB, chairman of the Nominations Committee, at thand@sbe.org or 704-335-4732.

Recognize Excellence: The SBE Awards

Recognize the outstanding efforts of your SBE peers by submitting a nomination for the 2015 SBE Awards. Categories include:

- Chapter Engineer of the Year
- Best Chapter Newsletter
- Best Chapter Website
- Most Interactive Chapter
- Best Frequency Coordination Effort
- Robert W. Flanders SBE Engineer of the Year
- James C. Wulliman SBE Educator of the Year
- Best Technical Article
- Technology Award

Submit your nominations today. Access the form at sbe.org/awards.



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SBE Schedule of Events

Saturday, April 11

- **Ennes Workshop** 8 a.m. - 5:40 p.m.
Conference registration required
LVCC South Hall Meeting Room S219
- **Certification Committee Meeting** 6:30 - 11 p.m.
Westgate Resort Conference Room 9

Sunday, April 12

- **SBE Board of Directors Meeting**. 8:30 a.m. - 12 p.m.
Westgate Resort Conference Rooms 9 and 10
- **Education Committee Meeting** 3 - 4:30 p.m.
Westgate Resort Conference Room 10

Monday, April 13

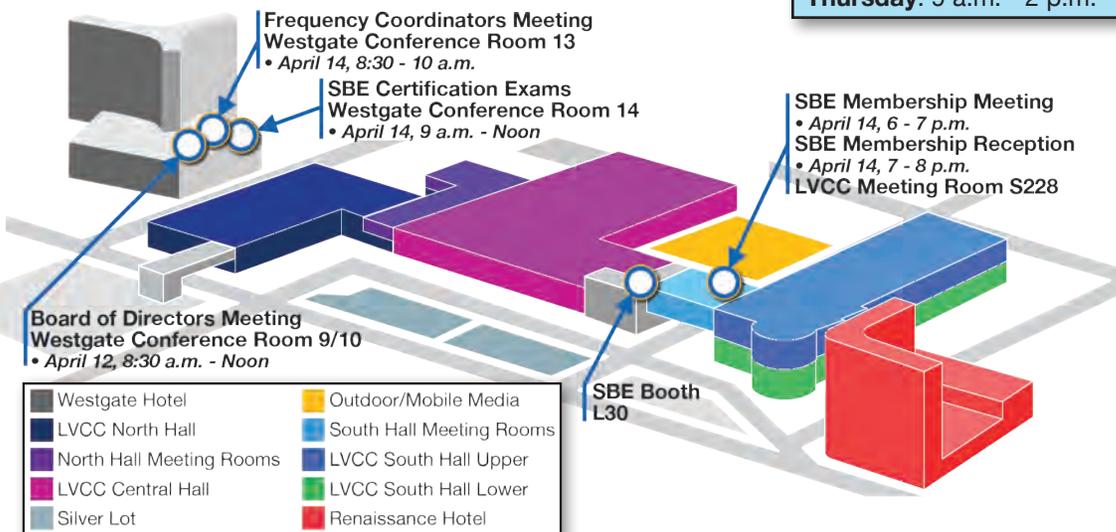
- **Frequency Coordination Committee Meeting** 3:30 - 5 p.m.
Westgate Resort Conference Room 7
- **Fry's Gift Card Daily Booth Giveaway**
Courtesy of Nema Electronics

Tuesday, April 14

- **SBE Certification Exams** 9 a.m. - 12 p.m.
Westgate Resort Conference Room 14
- **Frequency Coordinators Meeting** 8:30 - 10:30 a.m.
Westgate Resort Conference Room 13
- **Fry's Gift Card Daily Booth Giveaway**
Courtesy of Ka You Systems
- **SBE Spring Membership Meeting** 6 - 7 p.m.
Blackmagic Design Studio Camera giveaway, plus other prizes
LVCC South Hall Meeting Room S228
- **SBE Member Reception** 7 - 8 p.m.
Five Fire HD 7 tablets giveaway courtesy of Emerson
LVCC South Hall Meeting Room S228

Wednesday, April 15

- **Fry's Gift Card Daily Booth Giveaway**
Courtesy of Blackmagic Design



Ask the Experts

These SBE members or employees of SBE sustaining member companies are presenting or speaking at the NAB Show.

- Jay Adrick; GatesAir
- Cris Alexander, CPBE, AMD, DRB; Crawford Broadcasting Company
- Phil Alexander, CSRE, AMD
- Alan Alsobrook, CSRE, AMD, CBNT; Alsobrook Electronics
- Timothy Anderson, CPBE, DRB, CBNE; GatesAir
- Fred Baumgartner, CPBE, CBNT; SBE Education Committee, Ennes Foundation
- John Bisset; Telos Alliance
- Dave Breithaupt; Wheatstone Corporation
- Garrison Cavell; Cavell, Mertz and Associates
- Rich Chernock; Triveni Digital
- Dan Fallon; Dielectric
- Cornelius Gould; Telos
- Cindy Hutter Cavell; Cavell, Mertz and Associates
- Tariq Islam; NAB
- Alan Jurison, CSRE, DRB, AMD, CBNE; iHeartMedia
- John Kean, CPBE; NPR
- Jeff Keith, CPBE; Wheatstone Corporation
- Hal Kneller, CPBE, DRB, AMD, CBNE; GeoBroadcast Solutions
- Steve Lampen, CBRE; Belden
- David Layer; NAB
- James Leifer, CPBE; iHeartMedia
- John Lyons, CPBE; The Durst Organization
- Sam Matheny; NAB
- Larry Oaks; Meredith
- Wayne Pecena, CPBE, 8-VSB, AMD, DRB, CBNE; Texas A&M University - KAMU
- Skip Pizzi; NAB
- John Poray, CAE; SBE
- Ronald Rackley; du Treil, Lundin & Rackley, Inc.
- Tom Ray; Tom Ray Broadcast Consulting
- Mike Rhodes; Cavell, Mertz and Associates
- RJ Russell, CPBE; Journal Broadcast Group
- Dan Ryson, CBT; Cavell, Mertz and Associates
- Kim Sacks, CBT; CBS Radio
- John Schadler; Dielectric
- Philipp Schmid; Nautel
- Joe Snelson, CPBE, 8-VSB; Meredith Local Media Group
- Barry Thomas, CPBE, DRB, CBNE; Wilks Broadcasting
- So Vang; NAB
- Charlie Vogt; GatesAir
- S. Merrill Weiss, CPBE; Merrill Weiss Group
- Kelly Williams; NAB

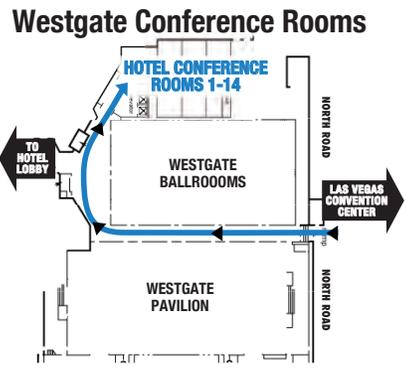
SBE Booth Hours
Booth L30
Sunday: 2 p.m. - 4 p.m.
Monday: 9 a.m. - 6 p.m.
Tuesday: 9 a.m. - 5 p.m.
Wednesday: 9 a.m. - 6 p.m.
Thursday: 9 a.m. - 2 p.m.

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ENNES WORKSHOP, from p. 1

three hours will go by in a flash, and your notes will likely join your reference material.

Radio, given its lower bandwidth requirements, has been effectively all-IP for some time. Barry Thomas of Wilks Broadcasting starts with a look at the state of the art and direction of that piece of broadcast engineering. But why is IP taking over all of broadcasting and media? It's hard to realize at first the long and deep ramifications far beyond the connector change I trivialized earlier. Stan Moote covers the deep and involved reasons television too will convert from serial digital interfaces and cross-point routing to an all-IP fabric.

Thomas Edwards (VP of engineering and development at Fox), Peter Chave (technical leader at Cisco Systems), Kevin Gross (AVA Networks, and the expert on AES-67), Paul Briscoe (all about timing), Charles Meyer (CTO production, Grass Valley), Mark Hilton (VP, Grass Valley), and Mo Goyal (Evertz Microsystems) take on everything from software-defined networks and precision time protocol to the emerging SMPTE and IT standards coming together to make even 4K practical.

This is all way too heavy for a whole day, so the program also includes a couple of diversions. John Lyons will look at the changing

RF climate in the Big Apple; Jay Holden (who writes widely of such things) will bring us up to date on lighting, Steve Lampen (Belden) closes with how to do all of this in the physical layer. By the way, there are four SBE Educator of the Year award recipients involved in this year's program.

The Harold Ennes Educational Foundation Trust grants scholarships and is involved with the funding and presentation of broadcast engineering-related educational programs, seminars and workshops. It also helps to underwrite costs associated with publishing technical books and manuals. The Trust is supported by many chapter donations as well as support from the industry and individuals. Of the entire year, I hope you find this the most rewarding day.

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Visit the SBE Booth to...

The Society of Broadcast Engineers is in booth L30. We're in the lobby at the north end of the South Hall Upper near the escalators. While you're at the NAB Show, stop at the booth so you can:

- *Browse the books.* A wide range of books from the SBE Bookstore are available for purchase.
- *Show your SBE pride.* Pick up something with the SBE logo to show your pride in membership, such as a shirt, tumbler or pin.
- *Renew your membership or join.* You can renew or join online or via mail, but if you're already there, take care of business.
- *Meet the staff and board.* Have a question about the SBE or our services? Your questions can be answered in person.
- *Win a prize.* We have a daily booth drawing, so stop by and drop your entry into the box.
- *Meet colleagues.* Because the SBE booth is not on the exhibit floor, it's an ideal place to meet before moving on.

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LEGAL PERSPECTIVE

By Chris Imlay, CBT
SBE General Counsel
cimlay@sbe.org

TV Audio Crawls and Emergency Information: The Deadline Looms

May 26, 2015 is, as of right now, the deadline set by the FCC in an April, 2013 Order in Docket 12-107 for all TV stations in all markets to make emergency crawls accessible to the blind and visually impaired. This has to be done by running an audio representation of the crawl on the SAP channel. We have long known of this impending deadline, but so far we haven't been able to do anything about it because none of the equipment manufacturers have as yet been able to devise a solution that works for all situations (EAS, weather, news ticker alerts, etc.).

Pursuant to the Twenty-First Century Communications and Video Accessibility Act of 2010, the FCC's 2013 Report and Order adopted rules requiring that emergency information in video programming be made accessible to the blind or visually impaired, and that certain apparatus be capable of delivering video description and emergency information to those individuals. Emergency information is defined as "information about a current emergency that is intended to further the protection of life, health, safety, and property, i.e., critical details regarding the emergency and how to respond to the emergency." Emergencies covered include tornadoes, hur-

ricanes, floods, tidal waves, earthquakes, icing conditions, heavy snows, widespread fires, discharge of toxic gases, widespread power failures, industrial explosions, civil disorders, school closings and changes in school bus schedules resulting from such conditions, and warnings and watches of impending changes in weather. "Critical details" include specific details regarding the areas that will be affected by the emergency, evacuation orders, detailed descriptions of areas to be evacuated, specific evacuation routes, approved shelters or the way to take shelter in one's home, instructions on how to secure personal property, road closures, and how to obtain relief assistance."

Broadcasters must air a tone along with on-screen crawls or graphics signaling to the blind or sight-impaired to switch to a SAP channel for emergency information. That channel will also include an audio version of the emergency text message. Cable and other program providers are also required to carry the audio. The elements of the requirements are as follows:

- Speech versions of text must be aired on the SAP channel
- Three warning tones must be given on both the main and the SAP channels
 - TTS is allowed, but it must be intelligible and have correct dialect for the area of use
 - Speech versions of crawls must be repeated twice
 - Speech to text is not necessary if the crawl is performed during a newscast at a scheduled time.
- If there is aired a map or graphic on the screen with the text or crawl, there must be an audio description of the map or graphic.

All broadcasts relating to the following events must be converted from text to speech: tornadoes, hurricanes, floods, tidal waves, earthquakes, icing conditions, heavy snows, widespread fires, discharge of toxic gases, widespread power failures, industrial explosions, civil disorders, school closings and changes in school bus schedules.

With respect to airing a complete listing of school closings during program-

ming, the FCC said it will leave it to the good faith judgment of the broadcaster to decide whether school closings and school bus schedule changes result from a situation that is a current emergency based on its severity and potential to threaten life, health, safety, and property. This leaves a lot to interpretation. For example, lists of school closings may go on for over an hour, because they must be repeated twice. This could preclude all other types of program audio on the SAP channel. Was that intended? While it is clear that stations do not have to provide viewer support such as an 800-number telephone line, The FCC order does not state whether EAS RWT/RMTs must be converted to speech or not. It is clear that EAS warnings must be converted to speech.

The real problem here is that manufacturers may not have equipment sufficient to implement this new obligation in time for broadcasters to meet the deadline. There is some discussion now about a proposal to extend the May 26 deadline. While there is no statutory time limit, the FCC said in 2013 that the secondary audio stream is currently used for video description, and televisions and navigation devices have long included the ability to access secondary audio streams. So it didn't expect any further action will need to be taken by manufacturers of most apparatus subject to the rules to come into compliance." If you have input on an extension of the deadline, let us know fast.

Thanks to SBE board member Ted Hand, CPBE, 8-VSB, AMD, DRB, for his assistance in providing background information for this article.

LINK

FCC Report and Order
<http://bit.ly/FCCcrawlsRO>

DATELINE

March 10: Station Issues and Programs List due in Public File
May 26: Deadline for TV stations to run Emergency crawls

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FOCUS ON SBE

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

SBE Commitment to Publishing Educational Resources Continues

Over the past 20 years, the SBE has published a number of books for use by our members. These have included handbooks for radio and television master control operators and station chief operators, a book on creating station operations manuals, the EAS Primer and a book about DTV-RF. Several years ago we also jointly published several books with Focal Press. Topics included HD Radio implementation, antenna zoning and basic NEC.

The handbooks mentioned are still in print. In fact, several thousand copies of each of the two operator handbooks have been sold over the years. Hundreds of SBE members and others have earned the SBE TV or radio operator certification as a direct result of using these publications to prepare for the exam.

We recently announced that the second edition of the *SBE Certification Handbook for Radio Operators* has been released. Many different sections of the book, writ-

ten by Ron Bartlebaugh, CBNT, have been updated. Ron recently retired from WKSU-FM at Kent State University in Ohio. The second edition is also available in digital format through Amazon.com and BarnesandNoble.com. Because the online commercial sellers don't allow us to pair the exam with the sale of the book, the exam is sold separately through the SBE national office (the cost of the print versions include the optional exam). Regardless of format, the cost of the combined book and exam is the same.

The SBE has two new important books in the works. Soon to be released is a book being written by SBE members Fred Baumgartner, CPBE, CBNT, and Nick Grbac, CBT, CTO, titled, *Television Operations – A Handbook of Technical Operations for TV Broadcast; On Air, Cable, Mobile and Internet*. It covers the concepts, practices and the regulations inherent in the job of TV master control operations. The book is specifically designed for those with a mini-

mum to moderate amount of master control exposure. The authors also say that experienced operators and non-technical managers will also benefit from this text. The SBE is the publisher.

In the works for release later this year is the *SBE Broadcast Engineering Handbook – Hands-on Guide to Station Design and Maintenance*. This publication, expected to be approximately 1,000 pages in length, will cover a wide range of television and radio topics geared toward the working station engineer. To be published by McGraw-Hill, co-authors of the book are Jerry Whitaker, CPBE, 8-VSB, and the SBE. Close to 50 subject-matter experts are contributing to the book that includes sections on audio, video, production topics, DTV transport, RF systems, IT, regulatory and management.

Both of these books are sure to become standard references for the modern broadcast engineer. Be sure to watch for release announcements from the SBE.

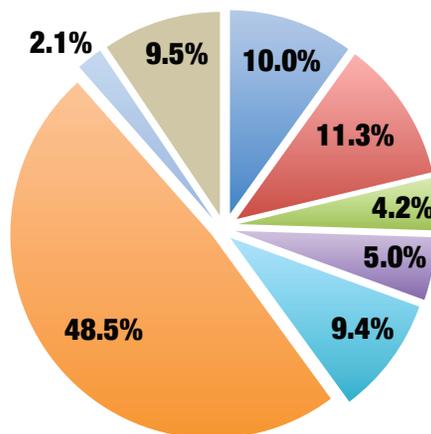
2014 SBE Financial Year in Review

The Society of Broadcast Engineers, Inc. completed 2014 with net revenue from all operations of -\$15,327. Gross income from all sources was \$680,865 while expenses were \$696,192. The value of SBE savings and investments as of Dec. 31, 2014 was \$1,112,783. Total SBE assets as of Dec. 31, 2014 were \$1,133,566, a decrease of \$15,327 over 2013.

A percentage breakdown of SBE income and expenses is depicted in the accompanying charts. A financial statement will be published in the June issue of *The Signal*, following completion of the Society's annual financial review.

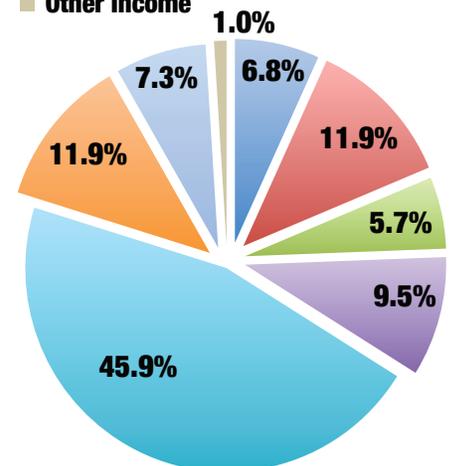
Expenses from All Sources

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



Income from All Sources

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





Engineering Perspective

By Dr. Richard Chernock
rchernock@trivenidigital.com
CSO, Triveni Digital; Chair, ATSC TG3

Update on ATSC 3.0

The broadcast industry has long operated based on the use of a common open standard. Broadcast equipment manufacturers build equipment compliant with the standard, broadcasters transmit signals that are compliant with the standard, and CE manufacturers sell equipment compliant with the standard – with an end result that consumers can watch any broadcast television channel with any TV they’ve purchased.

While ATSC 1.0 (based on A/53) has been quite successful – providing digital HDTV, surround sound, multicasting and electronic program guides (among other things) – it is based on technologies available in the mid-1990s. Technologies and viewer expectations have changed significantly since that time, notably:

- Physical layer technologies have been developed that approach the Shannon limit
 - Spectrum is becoming increasingly scarce
 - Major improvements have been made in video and audio coding efficiency
 - A strong desire exists for higher-resolution images
 - Audio has become more efficient, personal and immersive
 - Interactivity has become expected on the part of consumers
 - Delivery paths other than broadcast have become commonplace
 - Mobile devices have proliferated
 - Tablets are in widespread use
- These developments, taken collectively, have reshaped the television landscape.

It has become clear that to adapt to consumers’ changing habits and demands, a new system is needed by broadcasters to support new viewing behaviors. Such a system must include the capability to evolve with consumer demands, and thus provide extensibility that permits future adaptation. “Television” is now “viewed” in a variety of ways, through a growing range of media sources and delivery platforms. Among these, the Internet has become a major source of television content for consumers. Developing a new DTV system that incorporates all of these new elements

is now not only desirable, but has become essential. The current work on the ATSC 3.0 next-generation broadcast standard is meant to address these issues, using advanced transmission and video and audio coding techniques to bring new and creative services to viewers.

Broadly stated, the goal of the ATSC 3.0 work is to improve the television viewing experience, add value to the broadcast

handheld devices, vehicular screens and portable receivers are being considered in the work on ATSC 3.0. A primary goal of the ATSC 3.0 physical layer is to provide TV service to both fixed and mobile devices. Spectrum efficiency and robust service are some key focus areas. Increased data rates to support new services such as Ultra-High-Definition are a priority as well.

In addition to traditional fixed services,

ATSC 3.0 is intended to provide robust mobile services to devices that move, such as phones, tablets, laptops, and personal televisions. Since these devices are likely to move across borders, it is highly desirable that the specification contains core technologies that will have broad international acceptance and enable global interoperability.

The overall physical layer skeleton architecture is illustrated below. Currently, the following baseline features are among those that have been tentatively agreed to:

- OFDM based modulation, with a wide range of guard intervals to mitigate multipath
- LDPC based FEC, with a

wide range of code rates in 2 code lengths (supporting mobile and fixed)

- Wide range of constellation sizes

The ATSC 3.0 physical layer will provide a large range of possible operating points for broadcasters, all of which are very close to the Shannon limit (the theoretical limit of how much information can be carried over a noisy channel). Basic operating tradeoffs include selecting a lower data capacity/more robust service and/or higher data capacity/less robust service, or points in-between. Broadcasters have the opportunity to choose operating points that support their business models. Through the use of multiple Physical Layer pipes (PLP), it is possible to utilize different operating points simultaneously. For example, devoting a portion of the emission bandwidth to UHD services and the remainder to mobile services.

In the next issue: The Management/Protocol and Application/Presentation Layers

System Layers and TG3 Specialist Groups

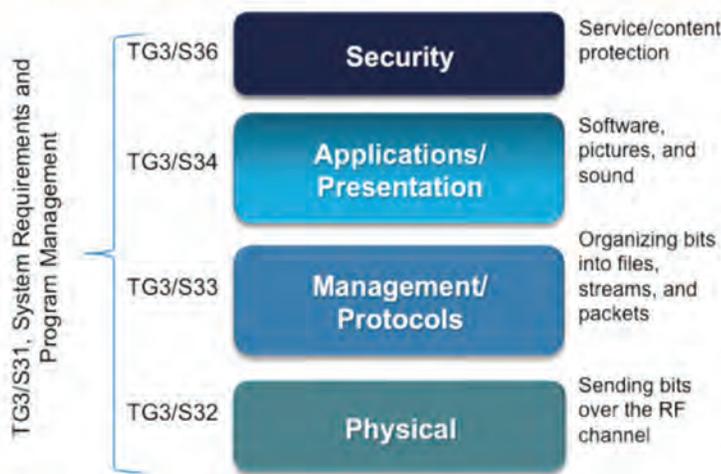


Figure 1. System layers of ATSC 3.0

service platform (including extending the reach and adding possible new business models) and to address the changing consumer behaviors and preferences. A choice was made early in the process to not require backwards compatibility, which allows major steps forward (but at the cost of a more difficult transition to the new system).

To complete this work, a number of system layers must be addressed, as shown in Figure 1 (with the associated ATSC Specialist Groups identified).

Physical Layer

The physical layer is the core transmission system that is the basis for any over-the-air broadcast service. The physical layer is focused on modulation and coding, emission waveforms, and other common system elements.

Multiple types of TV receivers, including fixed devices (such as traditional large screen living room and bedroom TV sets),

- AC Video Solutions • 2014**
Andrea Cummis 201-303-1303
Consulting, Systems Design/Integration
- Advanced Broadcast Solutions • 2012**
Arco Groenberg 206-870-0244
Systems Integrator
- American Tower Corporation • 2000**
Peter A. Starke 781-461-6780
Development/Construction/Management
- ATCi • 2012**
Anthony Graves 480-844-8501
Satellite Communications Solutions Provider
- Audemat-Worldcast Systems Inc. • 2000**
Christophe Poulain 305-249-3110
Control Manufacturer
- AVCOM of Virginia, Inc. • 2010**
Warren McElfresh 804-794-2500
Spectrum Analyzers
- AVDB Group • 2014**
Maria Cody 720-940-7131
Audio/Video/Lighting & Control
- Avid Technology • 2011**
Rich Griffin 303-248-3259
Broadcast Products and Services
- Belden Electronic Division • 1991**
Steve Lampen 800-235-3361
Cable and Connectivity
- Bell Tower • 2014**
Bruce Burris 918-789-9020
Tower Manufacturing, Design & Installation
- Black Box • 2014**
Brian Kutchma 724-873-6719
HD-KVM Switching & Extension
- Blackmagic Design • 2012**
Terry Frechette 978-337-0991
Switchers, Digital Cameras, Routers
- Bracke Manufacturing LLC • 2012**
Patra Largent 949-756-1600
RF & Microwave Components
- Broadcast Electronics Inc. • 1978**
Tom Beck 217-224-9600
Radio Equipment Manufacturer
- Broadcast Microwave Services Inc. • 1997**
Jim Kubit 805-581-4566
Manufacturer, Transmitters, Receivers,
Antenna Systems
- Broadcast Supply Worldwide • 1986**
Shannon Nichols 800-426-8434
Audio Broadcast Equipment Supplier
- Broadcasters General Store • 2004**
Buck Waters 352-622-7700
Broadcast Audio Video Distributor
- Canon USA Inc. • 1985**
Larry Thorpe 201-807-3300,
800-321-4388
Broadcast Lenses & Transmission
Equipment
- Cavell, Mertz & Associates Inc. • 2011**
Gary Cavell 703-392-9090
Consulting Services
- Comark • 2013**
Jack McAnulty 860-763-1100
Manufacturer Broadcasting Transmission
Equipment
- Comrex Corporation • 1997**
Chris Crump 978-784-1776
Audio Codecs & Telephone Interface
Products
- Comsearch • 2004**
Tim Hardy 703-726-5651
Frequency Coordination Services
- Continental Electronics Corporation • 1976**
Michael Troje 800-733-5011
AM & FM IBOC Transmitters
- CueScript • 2014**
Michael Accardi 203-763-4030
Teleprompting Software & Hardware
- Davicom, Division of Comlab, Inc. • 2014**
Guy Fournier 418-682-3380
Site Remote Controls
- Dialight Corporation • 2006**
US Headquarters 732-919-3119
FAA Obstruct. Lighting, LED Based
- Dielectric • 1995**
Cory Edwards 207-655-8131
TV & FM Transmission & Cellular Products
- Digital Alert Systems, LLC • 2005**
Bill Robertson 585-765-1155
Emergency Alert Systems
- DoubleRadius, Inc. • 2012**
Jeffrey Holdenrid 704-927-6085
IP Microwave STL
- du Treil, Lundin & Rackley, Inc. • 1985**
Jeff Reynolds 941-329-6000
Consulting Engineers
- Drake Lighting • 2015**
Dave Sheppard 270-804-7383
FAA Obstruction Lighting - High Intensity
- DVEIO - Division of Computer Modules Inc. • 2011**
Laszlo Zoltan 858-613-1818
Everything About Transport Streams
- e2v • 1997**
Mark Strohecker 914-593-6831
Electronic Components, SATCom Amplifiers
- Econco • 1980**
Debbie Storz 800-532-6626,
530-662-7553
New & Rebuilt Transmitting Tubes
- Emerson Network Power/Avocet • 2014**
George Morgan 917-592-0956
Avocet High Performance KVM
- ENCO Systems Inc. • 2003**
Kenneth Frommert 800-362-6797
Audio Automation and Playout
- ERI - Electronics Research • 1990**
David White 812-925-6000
Broadcast Antennas, Transmission Line,
Filters/Combiners, Towers and Services
- Floral Systems • 2008**
Shawn Maynard 877-774-1058
Television Broadcast Automation
- FOR-A Corporation of America • 2013**
Adam Daniul 305-773-7608
Innovation in Video and Audio Technology
- Fujinon, Inc. • 1986**
Thom Calabro 973-633-5600
Broadcast & Communications Products
- GatesAir • 1977**
Dave Hopson (TV) 513-445-5243
Mark Goins (Radio) 513-899-9124
Broadcast Equipment Manufacturer
- Geppo/General Cable • 1995**
Dennis Thompson 407-405-0756
Innovative Cabling & Custom Solutions
- Graham Brock, Inc. • 2012**
Marilyn Matheny 912-638-8028
Technical Consultation - Radio/TV
- HD Radio/iBiquity Digital • 2014**
Rick Greenhut 443-539-4335
HD Radio Technology
- Heartland Video Systems, Inc. • 2011**
Dennis Klas 920-893-4204
Systems Integrator
- IEWC • 2014**
Matt Granard 425-286-1900
Global Connectivity Solution Provider
- Image Video • 1997**
Zach Wilkie 416-750-8872 x228
Under Monitor Tally Display Systems,
Monitor Design and Manufacture Broadcast
Equipment
- Inovonics Inc. • 2012**
Lukas Hurwitz 831-458-0552
Radio Broadcast Equipment
- Integrated Microwave Technologies • 2009**
Elena Waldhuber 908-852-3700
Microwave Video Transmission and Receive
Systems
- JAMPRO Antennas Inc. • 2011**
Alex Perchevitch 916-383-1177
DTV/DVBT & HD Radio-IBOC Solutions
- JVC • 2014**
Lon Mass 973-317-5117
Professional Video Products
- Ka You Systems • 2011**
George Gimourginas 301-585-4302
Audio, Video, IP - Satellite
- Kathrein USA Inc. • 1985**
Michael W. Bach 541-779-6500
Antennas for Broadcasting &
Communications
- LBA Technology Inc. • 2002**
Katie Sneed 252-757-0279
AM/MW Antenna Equipment & Systems
- LYNX Technik • 2007**
Steve Russell 661-251-8600
Broadcast Terminal Equipment Manufacturer
- Markertek Video Supply • 2002**
Andrew Barth 845-246-3036
Audio, Video, A/V Broadcast Supply
- Maxell Corporation of America • 1991**
Patricia Byrne 973-653-2423
Data/Broadcast Video Media
- Micronet Communications Inc. • 2005**
Jeremy Lewis 972-422-7200
Coordination Services/Frequency Planning
- Microwave Video Systems • 2011**
Warren J. Parece 781-665-6600
Microwave Equipment Rental, Sales &
Service
- Middle Atlantic Products • 2005**
David Amoscatto 973-839-1011
Equipment, Mounting, Solutions
- MoreCom Inc. • 2009**
Kyle Moorehead 763-533-5535
Networking & AV Construction
- Moseley Associates Inc. • 1977**
Dave Chancey 805-968-9621
Digital STLs AM/FM/TV
- MusicMaster • 2014**
Shane Finch 352-351-3625
Advanced Music Scheduling Solutions
- Nascar Productions • 2014**
Abbey Kielcheski 704-348-7131
Live/Post Production Services
- 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. Nemsler 305-899-0900
Cables, Connectors, Assemblies and Fiber
Optic
- Neutrik USA, Inc. • 2012**
Kathy Hall 704-972-3050
Ruggedized Optical Fiber Systems
- Orban • 2011**
David Rusch 480-403-8300
Audio Processing AMFMTV
- Pacific Radio • 2013**
Josh Phillips 818-556-4177
Cables, Connectors, Tools, Racks
- Pasternack Enterprises • 2001**
Christine Hammond 949-261-1920
Coax & Fiber Products
- Potomac Instruments • 2012**
Guy Berry 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 Herbrtritt 724-349-1412
State-of-the-art RF Hardware Solutions
- QVC • 2011**
Kevin Wainwright 484-701-3431
Multimedia Retailer
- RCS • 2003**
Diana Stockey 308-284-3007
Audio and Video Content Management
- RDL • 2004**
Chuck Smith 928-778-9678 x142
Audio, Video, Control & Test Equipment
Manufacturer
- RF Specialties Group • 2008**
www.rfspecialties.com
Everything from the Microphone to the
Antenna
- Rohde & Schwarz • 2003**
Walt Gumbert 724-693-8171
Broadcast Transmitters, Test &
Measurement
- Ross Video Ltd. • 2000**
Darren Budrow 613-228-0688
Manufacturer, Television Broadcast
Equipment
- Sage Alerting Systems Inc. • 2010**
Gerald LeBow 914-872-4069 x210
Emergency Alert Systems Products
- SCMS Inc. • 2000**
Bob Cauthen 800-438-6040
Broadcast Equipment- New/Used
- Seacom Erectors, Inc. • 1997**
John Breckenridge 360-793-6564
Tower/Antenna Erections
- SEG • 2014**
Chris Childs 913-324-6004
Supply Chain Products and Services
- Shively Labs • 1996**
Dale Ladner 888-SHIVELY
FM Antennas & Combiners
- Shure Incorporated • 2012**
Bill Ostry 847-600-6282
Microphones, Wireless Systems, Headsets
Routers, Mixers, Consoles, Intercoms
- Sierra Automated Systems and Engineering Inc. • 2011**
Al Salci 818-840-6749
Routers, Mixers, Consoles, Intercoms
- Signiant • 2012**
Steve Gillen 781-221-4000
Signiant Content Delivery Software
- Snell Inc. • 1995**
John Shike 818-556-2616
Video Equipment Manufacturer
- Solid State Logic • 2014**
Steve Zaretsky 212-315-1111
Digital Audio Consoles/Routers
- Sourcerer • 2014**
Eddy Vanderkerken 214-912-5007
Broadcast Equipment, T & M
- Staco Energy Products Co. • 2010**
Paul Heiligenberg 937-253-1191 x128
Manufacturer of Voltage Regulators, UPS
- Superior Electric • 1995**
Michael J. Miga 860-507-2025
Power Protection Equipment
- Sutro Tower Inc. • 1989**
Eric Dausman 415-681-8850
Broadcast Tower Leasing
- TC Electronic • 2008**
Laura Davidson 818-665-4902
DTV Audio Level Processing
- Tektronix Inc. • 1977**
Michael Brett 503-627-5888
Video Test & Measurement, Equipment
Manufacturer
- Teletream • 2013**
Mark Wronski 530-470-1337
Transcoding, Captioning, Workflow
Automation
- Telos Systems/Omnia/Axia • 2003**
Denny Sanders 216-241-7225
Telos Systems Talk-Show Systems
- Teradek • 2011**
Jon Landman 949-743-5783
Camera-top ENG Solutions
- Terrestrial RF Licensing Company • 2003**
Jennifer Smith 888-373-4832
FCC Broadcast Auxiliary Licensing Services
- The Durst Org. - 4 Times Square • 2004**
John M. Lyons, CPBE 212-997-5508
TV/FM/Microwave Tower Site
- The Switch • 2011**
Peter Hartz 323-645-8011
Fiber Transmission Provider
- Thomson Video Networks • 2014**
Matt Tietze 301-537-6288
Video Compression and Processing
- Tieline The Codec Company • 2003**
John Lackness 317-845-8000
POTS, ISDN, Codecs & AV Products
- Tower Engineering Company • 2013**
Madison Batt 425-640-2266
Tower Engineering Analysis & Design
- Unimar Inc. • 2001**
Thad Fink 315-699-4400, 813-943-4322
Tower Obstruction Lighting Designer,
Manufacturer, Distributor
- Vislink Broadcast • 1991**
Mark Tommey 978-671-5700
Video Microwave Systems
- Wheatstone • 2010**
Jay Tyler 252-638-7000
IP Consoles, Routers & Processors
- WideOrbit • 2012**
Brad Young 214-923-6337
Broadcast Management Software,
Automation and Master Control
- Wireless Infrastructure Services • 2006**
Travis Donahue 951-371-4900
Broadcast Microwave, Tower & ENG
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Luiz Santiago 310-220-5664
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RETURNING STUDENT MEMBERS

Joshua A. Bush - Indianapolis, IN

during the Membership Drive. You could win a prize and you'll earn a credit on your 2016 dues. See details on page 3.

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Recruit a new SBE member



Enroll for the Leadership Development Course

By Rodney Vandever

Leadership! We hear and read a great deal about leadership. Some say we are over managed and under led. Some say we have a lot of managers, but there is a shortage of *real* leaders. The SBE Leadership Development Course in August will address just that. We think we know good leadership when we see or experience it. But what is it really?

Leadership is about people, and to be good – really good – it requires an understanding of a lot of people skills, such as communication, motivation, change, teamwork, managing conflict, problem solving, and more.

How important is leadership? The number one reason for failure among the Fortune 500 companies is poor interpersonal skills. Interestingly enough, the number one interpersonal skill that is lacking is communication. We also find the “soft skills” are indeed the hardest skills to develop. We will address that very point.

Leadership has two different meanings that will be explored

as we work through the sessions in the SBE Leadership Development Course. First, leadership is the catalyst that transforms potential into a new reality yielding a positive result. As a leader you can be the catalyst to help bring about needed change in yourself, others and your organization. Secondly, leadership is the art and science of getting the job done through the willing efforts of others. The key point: Leadership is an art and a science.

REGISTER TODAY

SBE Leadership Development Course
<http://sbe.org/education>

This course is designed to help you be prepared and bring about change in yourself, learn about leadership, your personality, motivation, managing conflict, time management, and a whole lot of other points of leadership. We hope to see you there.

Put it on your calendar: Aug. 4 - 6, 2015. The course will be held in Atlanta.

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.

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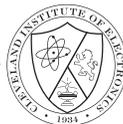
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Member Spotlight: Jim Moore

Member Stats

First Joined the SBE: 1991

Certifications: CPBE, 8-VSB, AMD, CBNT

Chapter: 66

Employer: KMPH/KFRE-TV, Fresno - Sinclair Broadcast Group

Position: Chief Engineer

Location: Fresno, CA



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

A. I appreciate my association with engineers who have a great body of experience in the industry, with an attitude of service. They know how to get it done. I participate in local ENG frequency coordination and on the EAS committee. I also value the opportunity to test my understanding of the technology by participating in the SBE certification program. I enjoy the challenge.

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

A. I, like many, entered into broadcasting through a part-time job in college, where I could work a split shift to attend classes. The combination of technical electronics and my study of business at CSU, Fresno has served me well.

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

A. I appreciate the late Randy Stover, a local contract engineer and SBE member, who took the time to show me, a young, inexperienced engineer, how to keep my first small AM radio station on the air, and the value of good engineering practices. I have enjoyed getting to work with many others, including Ben Dawson and Jim Hatfield.

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

A. I really enjoy the media business, working with a great group of people, planning, building and maintaining our

evolving facilities, and taking advantage of emerging technologies to meet the developing needs of our media consumers.

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

A. ...really enjoy photography. I come from a long line of photographers, extending back into the days of glass plates and flash powder. I also enjoy flying, motorcycle riding, sailing, amateur radio, and ... occasional quiet evenings at home.

Q. *Tell us something others may not know about you.*

A. One of my jobs during college was working with tour guides at Hearst Castle, one of the magnificent estates built by the newspaper publisher William Randolph Hearst. Occasionally, after the last tour of the day, the staff and visiting members of the Hearst family would gather by the pool. It was easy to imagine what it was like before it became a tourist attraction. It was there at the castle that I developed a deep appreciation for art and its integration into its surroundings. I also was fascinated by what people found interesting, and how they reacted to what they saw.

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MEMBERS ON THE MOVE



▶ **Lucinda Hutter Cavell**, senior engineer and practice manager at Cavell Mertz & Associates, will receive the TVNewsCheck fifth annual Women in Technology Leadership Award. The award will be presented during the NAB Show on April 14.



▶ **Rick Kemp** is the principle at R K Engineering.



▶ **Dan Slentz** has taken over as director of engineering and IT at Ft. Myers/Sun Broadcasting, Ft. Myers, FL.



▶ **Mark Simpson, CPBE, AMD, DRB, CBNE**, is now VP of engineering at Townsquare Media.



▶ **Shane Toven, CBRE, CBNT**, has become a marketing manager at the Telos Alliance.

Have a new job? Received a promotion? Let your fellow SBE members know. Send your news to Chriss Scherer at cscherer@sbe.org.

MARK YOUR CALENDAR

The SBE @ the NAB Show

See page 8 for full details

SBE Certification Exams

NAB Show

April 14, 2015

Application deadline is closed.

SBE Certification Exams

Local Chapters

June 5 - 15, 2015

Application deadline is April 10.

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