



Chapter 24, Inc.
Madison, Wisconsin

Society of Broadcast Engineers

July 2001



TOWER INDUSTRY PART 7 - BIRD – TOWER COLLISIONS

By Vicki W. Kipp

This is Part 7 in a series of articles about the tower industry. This month, we will examine the phenomenon of birds colliding with broadcast towers. At this time, there is much speculation about causes of and solutions for bird collisions with towers, but the theories still need to be thoroughly investigated.

At first glance, the phenomena of birds flying into towers may seem like a rare occurrence. But research reveals that birds fly into towers and guy wires in greater numbers than one might expect. On several recorded occasions, thousands of birds have died on a single tower in one night. For example, up to 10,000 birds, mostly Lapland longspurs, died at a 420-foot tower during a West Kansas snowstorm on January 22, 1998. From 1955 – 1980, 42,386 birds died at a 1,010-foot tower near Tallahassee, Florida. Federal officials estimate that 4 to 5 million birds are killed each year by communications towers.

Although reports of birds colliding with towers go back 100 years, this seems to have become a hot-button topic within the past few years. There are several reasons for this sudden awareness. Citizen resistance to new tower construction is increasing, with tower opponents seeking any reasonable argument against new construction. Environmental organizations, spurred on by the staggering number of bird deaths on a single night in 1998 at a Kansas tower, have stepped up their fight against what they call “tower kill.” Meanwhile, former President Bill Clinton issued an executive order on January 11, 2001 that requires Federal agencies to actively avoid take steps to protect birds and their habitat.

CAUSE

Theories abound as to why birds crash into towers, guy wires, and the
(continued on page 4)

Next Meeting:

Thursday,
July 26, 2001

SBE Chapter 24
Annual Picnic

Mendota County
Park
Shelter #2

Highway M in
Middleton
5:00 – 9:00PM

(see map inside on the
meeting flyer)

In This Issue:

Minutes	page 2
Amateur Radio News ...	page 3
SBE Short Circuits	page 3
FCC Auction Setback ...	page 6
Job Opportunity	page 7

CANDELABRA WORK PROGRESSES

By Leonard Charles

Despite a rainy Spring, work on the Madison Community Tower is progressing nicely. Between the rain showers the Kline Tower Crew was able to finish final reinforcements on the tower and hang and power a temporary antenna for each station that didn't already have one in place. WISC TV 3, WMSN 47, and WHA 21 are now operating from temporary antennas off the side of the tower. WKOW TV/DT switches to a standby antenna when the crew is working on top and then back to its main antenna when the top is clear. WISC DT is off the air for the

duration of the project.

Once all temporary antennas were operational the Gin Pole was attached to the end of the Southeast arm of the tower top. As depicted in the accompanying photo, a false tower section was attached to the bottom of the arm and a special custom plate to the end of the arm to support the Gin Pole. The pole was first mounted at the correct height to remove the old WMSN 47 antenna and the “stub” on which it sat. A new stub was then lifted in place and the new WMSN 47 antenna lifted and placed on it. The Gin Pole was raised to the proper

height to accommodate lifting and placing the double stack of the channel 50 and channel 11 antennas, which were joined on the ground prior to the lift. On July 3rd the double stack was lifted and attached to the top of the WMSN 47 antenna to complete the triple stack on the Southeast arm. The next several days were spent installing the necessary transmission lines to and through each antenna as well as the AC lines necessary for the channel 11 antenna heaters. As of this writing on July 6th, that work continued.

The next step will be to move the Gin
(continued on page 7)

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June Business Meeting Minutes

Chapter 24 of the Society of Broadcast Engineers met on Wednesday, June 20, 2001 at J T Whitney's Pub & Brewery in Madison, Wisconsin. There were 21 members in attendance, 15 of whom were certified, and one guest.

The meeting was called to order at 7:00 PM by vice chair Vicki Kipp. Minutes of the May meeting as published in the newsletter were approved. Treasurer Stan Sarch reported the chapter's bank balance was in the black.

Newsletter editor Mike Norton announced the deadline for articles for the July issue will be due at midnight, Friday, June 6th. The folding party will be held Wednesday, July 11th at WKOW-TV. There was no membership report.

Sustaining membership chair Fred Sperry reported three recent renewals: Roscor Wisconsin, Sony Electronics and Ross Video.

Program Committee member Denise Maney announced that next month's meeting will be held July 26th, the annual chapter picnic at Mendota Park.

Certification chair Jim Hermanson announced the next local exam session will be held August 17-27, with the deadline to register as July 9th. The following local exam will be November 9-19.

Frequency Coordinator Tom Smith was absent but it was reported that he is working with UW Electrician Ed Walsh and UW Sports Information about wireless mic and "Coach-Com" frequency information on campus.

National Liaison Leonard Charles reported that SBE National has extended the deadline for awards nominations to June 22. Vicki Kipp said that Chapter 24's nominations were filed in May.

In new business, Kevin Ruppert said that the National office needs the form for change of officers. He has the draft of the form and will get updates. Leonard Charles will update the chapter's web site once committee chairs are finalized.

In professional announcements, Denise Maney introduced Larry Coha from Panasonic. Larry replaces Herb Van Driel, who recently retired. Jim Hermanson reported that a contract engineer is needed for radio stations in Portage and Wisconsin Dells. Leonard Charles reported that the program for this fall's Broadcasters Clinic has been finalized. The Clinic will be held October 9-11, 2001.

The business meeting adjourned at 7:10 PM. Denise Maney introduced the first of two programs, a Candelabra tower update, and later a presentation on amateur radio by Tom Weeden.

Submitted by Tom Weeden, Secretary

SBE Short Circuits – July 2001

By John L. Poray, CAE
SBE Executive Director

VISIT THE SBE WEB SITE

If you haven't visited the SBE web site lately, take a moment to check it out. Information on engineering and regulatory issues (FCC Filings, EAS, EFD, 2 GHz transition), educational programs, frequency coordinators, technical books, membership, insurance, jobs and more can all be found there. The address: www.sbe.org.

SPACE FOR LEADER SKILLS COURSE II AVAILABLE

There are still a few seats available for the SBE Leader Skills Seminar, Course II to be held in Atlanta, GA, August 8-10. "Expanding Your People Skills" will be led by Dick Cupka, who has presented management training to broadcast engineers for more than thirty years. The cost is just \$490 for this outstanding seminar, which has helped prepare more than 1,000 broadcast engineers for management since 1965. Attendees must have previously attended Course I or any of the SBE or NAB sponsored Leader Skills five-day programs. To register or for more information, contact Angel Bates at the SBE National Office at (317) 846-9000 or abates@sbe.org. The deadline to register is July 6.

(continued on page 6)



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AMATEUR RADIO NEWS

By Tom Weeden, WJ9H

- The widely reported New York bill banning the use of hand-held cell phone while driving should have no affect on amateur radio mobile operation, according to ARRL General Counsel Chris Imlay, W3KD. The bill, A.9280, was signed into law recently by Governor George Pataki, a former amateur radio operator. It requires cell phone users to use hands-free devices when calling. The measure specifies "mobile telephone" use, and defines a "mobile telephone" as a device used by subscribers to a wireless telephone service. The bill also specifies "using" as holding the mobile telephone "to, or in the immediate proximity of, the user's ear." The new law will be phased in starting November 1. It calls for fines of up to \$100. The measure also calls upon the New York Commissioner of Motor Vehicles to study the effects of the use of mobile telephones "and similar equipment" in conjunction with the operation of a motor vehicle and report back to the legislature in four years. A similar measure requiring hands-free cellular telephones recently passed the Rhode Island legislature.

- Atlanta broadcaster Andy Funk, KB7UV, has won a second Emmy from the Atlanta Chapter of the National Academy of Television Arts and Sciences for outstanding technical or engineering achievement. As assistant news operations manager for FOX5/WAGA-TV in Atlanta, Funk is responsible for the technical aspects of news gathering. The Emmy was awarded for the "RunnerCam" segments of FOX5's broadcast of the Peachtree Road Race—the world's largest 10K race. RunnerCam is FOX5's name for its broadcast of live pictures and sound from a photojournalist and reporter actually participating in the race. To make RunnerCam happen, the photojournalist carries a camera, wireless microphone receiver, two-way radio, and a small microwave transmitter and antenna. While running in the race, the photojournalist points his microwave antenna at the "Chopper 5" helicopter overhead. Electronics in the aircraft relay the signal to a microwave ENG receiver. At the controls of the station's receivers, Funk coordinated this effort along with live feeds from five ground locations, two motorcycles and a second helicopter. Funk was also honored with an Emmy for RunnerCam last year.

- Amateur radio rode once again on the annual Great Circus Train run from Baraboo to Milwaukee. Special Event Station W9D/Circus Train Mobile operated July 7-9 on 40, 20 and 2 meters. On one recent annual run a two-way contact occurred between the train and a French cosmonaut aboard the Mir space station.

(Excerpts from "The ARRL Letter" and "Badger State Smoke Signals" web site)

Thanks to WKOW-TV for providing copying and folding facilities for the Chapter 24 newsletter!

Thanks to WISC-TV for maintaining the web server for the Chapter 24 Web page!



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TOWER INDUSTRY PART 7 (continued from page 1)

ground surrounding towers. Suggestions include attraction to tower lights, weather factors and low visibility, blind collision due to lack of tower light, tower height, effects of RF, and Darwinism.

ATTRACTION TO LIGHT

Towers present the greatest threat to migratory birds that fly at night. Some scientists believe that birds are attracted to flashing red lights or the strobe effect of lights. Many experts claim that once birds enter the lighted area of the tower, they are reluctant to leave that lighted area. Observers claim that birds often successfully fly through the tower frame and on towards the edge of the tower's lighted area, only to turn and fly back toward the light source. The birds circle the tower, flying around the light. Predictably, some of the circling birds will strike the guy wires of the tower. As more and more birds flock into the small lighted area, the tower circumference becomes congested. Birds may collide with other birds or spear each other with their beaks. In the experiment "Attraction of nocturnal migrants by lights on a television tower," researchers William Cochran and Richard Graber alternated between turning the tower lights on and off. They found that birds swarmed around the tower when the lights were on, and quickly separated from the tower when the lights were turned off. According to data reported at www.towerkill.com, "It is important to clarify that the lights apparently do not attract birds from afar, but rather tend to hold birds that pass within a certain illuminated vicinity."

WEATHER

Weather is thought to be a significant factor in bird collisions with towers. There is evidence that significantly

more birds fly around towers on overcast nights than on clear nights. Migratory birds appear to actively avoid towers on clear nights.

According to many ornithologists, birds navigate using celestial beacons. When skies become cloudy or foggy, birds' views of the stars are blocked. If there is a low cloud ceiling, birds are also deprived of any broad orienting perspective that the landscape would have otherwise provided. To a bird, tower lights may mimic the stars. Birds may be attracted to towers on overcast nights because tower lighting aids their vision. When it comes to navigation, birds are suspected to rely more heavily on visual cues than on an internal magnetic compass. Wisconsin DNR environmental analyst Steve Ugoretz says, "Birds flying in these low-light conditions may circle the lights and inadvertently fly into guy wires, just as they navigate in relation to the moon: they keep the light at right angles to their flight to keep going in the same direction."

LACK OF LIGHT

While many people blame tower lights for bird deaths, others feel that *unlighted* towers are a threat to birds. Some researchers even suggest that unlit towers should add lighting to protect birds from blind collision. When flying in the low visibility, the birds may not see a tower in time to avoid it. Researchers have reported hearing alarm calls from birds as they finally do spot the tower and attempt to swerve. Characteristics such as vision and flight agility determine how vulnerable birds are to blind collision. Faster flying birds such as waterfowl and shorebirds are more susceptible to blind collision than slower, more agile birds such as songbirds.

TOWER HEIGHT

While larger migrant birds are known to ascend to altitudes above the clouds, smaller migrants are more likely to fly underneath clouds at levels interrupted by tall towers. A short tower built on a hilltop is suspected to have the same risk to birds as a taller tower built on flat ground.

DISRUPTION BY RF

RF energy may disrupt birds' navigation skills and cause them to crash. However, at least one study contradicts this theory. In 1976, researchers Avery, Springer, and Cassel conducted a study on two overcast nights where they alternately turned the transmitter on and off, and then observed how many birds congregated at the tower. Their results showed that the presence of RF energy at the tower had very little, if any effect on the gathering of birds at the tower.

NATURAL SELECTION

Another possible explanation of bird collisions at towers is Darwinism as it applies to birds. Charles Darwin's theory of evolution asserts that through natural selection, individuals with characteristics advantageous for survival in a specific environment form an increasing proportion of their species in that setting with each successive generation. Translated to birds and towers, towers are a device of natural selection which weeds out birds that are less observant. One tower industry expert suggests that some birds will collide with the first tower they come across, while other birds will fly past many towers without colliding once.

MORTALITY

Bird mortality at towers can occur in (continued on next page)

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TOWER INDUSTRY PART 7 (conclusion)

several different ways. A bird may crash into the tower structure or guy wires, dying immediately from a broken neck or subsequently dying from the impact of falling to the earth. A bird might survive the impact of colliding with a tower and falling to the ground, only to be killed by a predatory animal while lying stunned or injured on the ground. Birds may fly right into the ground as a result of disorientation. Or a bird may be accidentally speared by another bird's beak.

TOWER DEFENSE

Although towers are being scrutinized for their role in bird deaths, far more birds die from other hazards such as cats, automobiles, high rise buildings, and power lines than from towers. Stealth towers can even become a habitat for birds. Environmentalists have called for tower restrictions that would discourage the use of guy wires for towers. But this raises the issue that tall towers without guy wires would require more steel and concrete, and would cost more. In a memo to the US Fish and Wildlife Service, FWS Director Jamie Rappaport Clark says, "...it must be recognized that some birds may be killed at structures such as communications towers even if all reasonable measures to avoid it are implemented."

SOLUTIONS

With the goal of making towers as harmless to birds as possible, independent researchers, the US FWS, and the Communications Tower Working Group are searching for solutions. Since bird migration routes are busiest in the eastern two-thirds of the country, the majority of research about bird - tower collisions will occur there. Radar, acoustical monitoring, and night vision goggles will be among the research tools used by ornithologists,

including experts in bird vision and navigation.

In hopes of alleviating the problem of birds colliding with towers, some novel ideas have already been suggested. These include covering towers with fluorescent paint, placing mirrors at towers to shine light skyward; and installing giant netting, devices that spin in the wind, or devices that broadcast low frequency sounds. One researcher wants to study the role that flight exhaustion might play in bird deaths by measuring the body fat and water content of birds killed at tower sites.

The US FWS has listed some voluntary guidelines for tower construction. Their suggestions include: installing antennas on existing towers; installing white strobe lights on towers instead of pulsing red lights; reducing the number of guys when possible; and constructing unlit and unguyed towers that are less than 200 feet above ground level.

Comprising about 50 Federal officials, conservationists, researchers, and tower industry members, the Communications Tower Working Group (CTWG) is researching tower kills. They have published a guide called "Service Interim Guidelines for Recommendations on Communications Tower Siting, Construction, Operation, and Decommissioning." Suggestions include: collocating antennas on a single tower; avoiding guy wires for towers less than 199 feet above ground level; not locating new towers near wetlands, migratory flyways, habitats of endangered species, or areas with much fog, mist, or low cloud ceiling; minimizing amount of FAA required warning and obstruction avoidance lighting used for towers more than 199 feet above ground level; Using only white (first choice) or red

(second choice) strobe lights at night; Limiting the number of lights, intensity, and number of flashes per minute to the FAA required minimum; Avoiding solid red or pulsating (beacon) red lights since they attract night-migrating birds at a much higher rate than other light types; Adding daytime visual markers to guyed towers in areas of significant bird population to protect day-migrating birds. Recommending relocation of a proposed tower site if that site is consistently used by a sizeable number of birds; Down shielding site security lighting to prevent light from trespassing beyond the site boundaries; Allowing CTWG researchers access to a tower site, to use monitoring equipment, and to place catch nets below the tower, but above the ground; and removing obsolete or no longer used towers within 12 months of the end of use.

CONCLUSION

The phenomenon of birds colliding with towers is a complex issue. At this point, the exact causes have not been confirmed, and researchers are still in search of reasonable solutions that succeed.

Next month, we'll continue our discussion of the tower industry.

Information for this article came from the following sources: Newhouse News 2000 Seeman, Bruce Taylor, "Scientists, Communications Industry Struggle With Bird Kills at Towers "; <http://www.towerkill.com>; <http://dnr.state.wi.us>. "Wisconsin participates in effort to reduce bird deaths at towers."; Personal Communications Industry Association "Memo from Sheldon Moss"; Communications Tower Working Group "Service Interim Guidelines For Recommendations On Communications Tower Siting, Construction, Operation, and Decommissioning."



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FCC GETS AUCTION SETBACK

By Tom Smith

On June 22nd, the FCC was dealt a major setback in the way it conducts auctions of radio spectrum. A Federal Appeals Court ruled the FCC violated bankruptcy procedure by canceling the licenses of Nextwave, one month after they filed for bankruptcy. Nextwave had bid \$4.74 billion for its licenses and had paid \$474 million to the FCC when they experienced problems in raising the rest of the money. They were considered a small company by the FCC and were allowed to pay by installments. They had defaulted on their payments and the FCC then took back the licenses. The FCC re-auctioned the licenses with bidding ending in late January of 2001. In this

auction, the FCC took in nearly \$17 billion dollars from such companies as Verizon and partners of AT&T and Cingular. The disputed licenses of Nextwave were \$15.85 billion of the total of the January auction.

In its opinion, the Court said that Federal Agencies had to follow all federal laws, not just those that they administer, and that the FCC had violated a provision of the Bankruptcy Code that prohibited governmental entities from revoking debtors' licenses for failure to pay debts dischargeable in bankruptcy. The Court also questioned the methods or lack of, that the FCC use in determining if bidders were credit worthy. At this time the FCC is still deciding on whether to appeal, as

are the winners in the second auction. Nextwave is moving ahead by awarding Lucent Technologies a \$100 million contract to build their network. According to the Milwaukee Journal Sentinel, Madison will be one of the first areas to get service from Nextwave.

The FCC was dealt another blow when the Supreme Court refused to hear a case in which an appeals court ruled that the FCC could not confiscate the licenses of Metro PCS. Metro PCS also had received bankruptcy protection on the \$1.06 billion it owed the FCC.

Compiled from reports from the NY Times, Washington Post, Wireless week, Milwaukee Journal Sentinel and the Opinion of the US Court Of Appeals.

FCC VACANCIES FILLED

By Tom Smith

The last FCC Commissioner by President Bush has been sworn in, thus filling the five seats on the Commission. Joining Chairman Michael Powell and Gloria Trisiani are Kathleen Q. Abernathy, Kevin J. Martin and Michael J. Copps.

Abernathy was a partner in a Washington law firm and was vice-president for government affairs for a number of telcom firms. She also served in the offices of former FCC Commissioners Sherrie Marshall and James Quello. She has Wisconsin ties having received a B.S. from Marquette University.

Martin served on the Bush-Cheney transition team, worked at a Washington law firm, and was an advisor to former FCC Commissioner Harold Furchtgott-Roth.

Copps served in the Commerce Department in the Clinton

Administration, and was a former Chief of Staff for Senator Ernest Hollings who is Chairman of the Commerce Committee which oversees the FCC.

Powell, Abernathy and Martin make up the Republican appointees of the Commission and Trisiani and Copps are the Democratic appointees. Abernathy and Copps were sworn in on May 31st and Martin was sworn in on July 3rd.

From FCC Press Releases (www.fcc.gov)

Short Circuits (continued)

TWO CERTIFICATION EXAM SESSIONS LEFT IN 2001

There are still two SBE Certification exam sessions yet to come in 2001. Check the list below for the exam period that is best for you. For more information about SBE Certification, see your Chapter Certification Chair or contact Linda Godby, Certification Director at the SBE National Office at (317) 846-9000, or lgodby@sbe.org.

2001 Certification Exam Dates

Exam Dates / Application Deadline
August 17-27 / July 9, 2001
November 9-19 / September 28, 2001

Both certification exam window locations will held at local chapters.

Questions and comments about SBE may be e-mailed directly to Executive Director, John Poray at jporay@sbe.org.

Membership Report

By Paul Stoffel

The SBE National office lists Chapter 24 with 78 members, 54 who are certified. Chapter 24 mails 120 newsletters to members, sustaining members, radio and television managers, and others.

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CANDELABRA PROGRESS (continued)

Pole and its supporting components to the Northeast arm and begin dropping the WISC TV 3 and WHA 21 main antennas. A new channel 20/21 antenna will replace the existing WHA antenna and the WISC TV 3 main



Figure 1. Madison Community Tower work in progress. Photo taken July 3rd.

antenna will return to its position as the top half of the double stack.

When the project is complete the candelabra will consist of a triple stack, a double stack, and a single on the Southeast, Northeast, and West arms respectively. The triple stack and the double stack will be the same height with the beacon perched on top the double stack making it the highest point of the tower – exactly the same height as it was prior to the project.

Though the project is behind schedule it is still expected to be completed in July.

Employment Opportunity

VIDEO TECHNICIAN

Roscor, an industry leader in video systems technology, is looking for a component level electronics maintenance technician with a minimum of two years bench and field work experience in the repair of broadcast and industrial VCR's, cameras, monitors, etc. This position is in our Milwaukee office. Solid knowledge of analog and digital electronics is required. Send your resume to:

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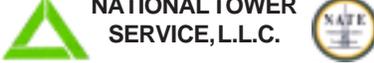


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SBE Chapter 24 Newsletter
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FIRST CLASS MAIL

Newsletter edited on Pagemaker 5.0 by: Mike Norton
Contributors this month: Leonard Charles, Vicki W. Kipp, Tom Smith, Paul Stoffel, and Tom Weeden.
Thanks to Leonard Charles for his work on the Chapter 24 WWW page.

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JULY MEETING and PROGRAM



Society of Broadcast Engineers CHAPTER 24 MADISON, WISCONSIN Thursday, July 26, 2001

SBE Chapter 24 Annual Picnic

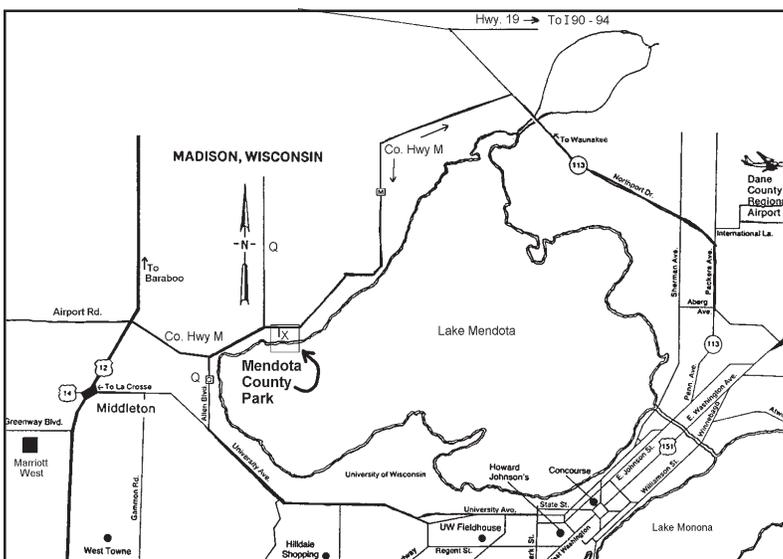
**Mendota County Park
Highway M in Middleton
Shelter # 2 (near camp grounds)
5:00 – 9:00pm**

Come for the Food – Stay for the Fun and Games! Meet by the playground near shelter #2. The horseshoe tournament is ON! Pick your teams. The traveling trophy is the Grand prize, and the best 2 of 3 games wins.

Chapter 24 will supply the meats, cheeses, buns, and condiments for

sandwiches, and provide paper plates, napkins, plastic ware, and cups. Please bring a dish to share, and your own drinks. See the chapter web site to sign up for chips/dip, potato salad, desserts, etc.

We'll see you there!



Visitors and guests are welcome at all of our SBE meetings!

Program Committee:

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277-8001

Steve Paugh
277-5139

Fred Sperry
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