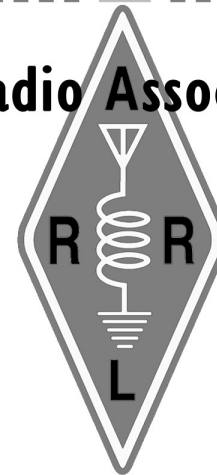


# New Ham Kit

Courtesy of



**East Greenbush Amateur Radio Association**



*Information to help get you “On the Air”*

# Congratulations on Getting Your New Amateur Radio License!

It's exciting to pass your licensing exam... and it's also probably a little intimidating.

## Now What?

You're likely asking yourself: "OK, what now? How do I get on the air? Where can I get help and guidance? Who can answer my questions about radios, antennas and what gear I need? What should I buy and where can I buy it? How much do I have to spend? "Once I get set up, how do I operate, make contacts and what do I say?"

Well, don't worry. Those are the same questions every new ham has asked since Amateur Radio began. Luckily, there's plenty of help to get you up and running -- and comfortable with your new hobby. And, this guide is designed to get you on your way!



## Join the Club!



First, consider joining a local radio club. This will put you in contact with other local hams who are happy to help you get started and answer your questions. Plus, most clubs have "Elmers" -- these are the folks who have been hams for many years and who offer a wealth of knowledge and experience. Elmers are a great resource and they stand ready to guide you. They also know what it's like to be a new ham -- because they were new hams themselves at one time. It's tradition for hams to lend a hand to one another -- so take advantage of their knowledge. If you are interested in joining EGARA -- the East Greenbush Amateur Radio Association -- you'll find an application in this packet. If you live out of the area, a quick Google search can help you find a club closer to your home.

## Peat and Repeat

Also in this packet is information on Amateur Radio repeaters, including how they work and how you can use them to get on the air. A Technician Class license will give you privileges on VHF and UHF bands, and this is where you'll likely begin. Plus, dual-band portable VHF/UHF hand-held radios can be very inexpensive, with some as low as \$30. So you can get on the air without busting your budget and then upgrade your gear as you advance -- both in experience and license class.

You'll also find that the Internet can be a great resource. There are many sites dedicated to ham radio, including information on best operating practices, news updates, equipment reviews and YouTube videos on a wide range of topics. You will also find Amateur Radio equipment manufacturers and retailers on-line, giving you the opportunity to compare gear, specifications and prices. Most clubs also have websites and many maintain resource pages with links to sites dedicated to ham radio.

EGARA's website has such a resources page, as well as updates and news about club activities and events. Copies of its current and past newsletters are also available for download. You'll find it at: [www.EGARA.club](http://www.EGARA.club).

## The Band Plan

Also in this information packet is a copy of the "Band Plan" published by ARRL - the American Radio Relay League. This plan shows you all of the frequencies assigned to Amateur Radio and which portions are available to each license class: Technician, General and Amateur Extra. The plan also indicates which types of operation are assigned to the various bands, such as CW (Morse Code), Single Side Band (SSB) Phone, data and so forth. It's important that you only transmit in the bands allowed by your license and to limit them to the appropriate type for the band in which you are operating. (Note: some license classes are no longer issued, but amateurs can still operate if there's is still valid. These include Novice and Advanced class licenses).

# You Worked Hard to Get Your License!



## Now Get On the Air!

Your amateur radio license opens the world to you. Now, we invite you to maximize your enjoyment of ham radio by joining the *East Greenbush Amateur Radio Association*. Here's all the benefits you'll enjoy for the low annual membership fee of just \$15 as an individual or \$25 for a family. (Or join both EGARA and ARRL for just \$49!)

- **Monthly membership meetings** with topics designed to enhance your knowledge of amateur radio, plus free pizza and refreshments! Meetings are held the second Wednesday of each month.
- **Meet other hams** and make new friends with similar interests;
- **Free subscription to Sidebands**, EGARA's monthly E-Newsletter is loaded with club news, interesting articles, helpful tips, a calendar of upcoming events and free classified ads to buy, sell and swap gear;
- **Hamfest!** A chance to meet other hams and find great deals from equipment vendors! Plus, learn about advances in amateur radio, enjoy demonstrations, win prizes and more!
- **Annual Field Day** with a great chance to practice your emergency operating skills, temporary station setup, and more! It's a great learning experience, and a lot of fun;
- **Club Repeaters** available to members to extend the reach of their radios.
- **VE Test Sessions** where you can upgrade your license;
- **Annual Holiday Party!** A December tradition of fun, food, friends and raffles!
- **Elmers** to help you learn. Senior members of EGARA are a great resource for answering your questions;
- **Involvement in community** events and emergency communication services, a foundation of ham radio and EGARA. When emergency communications are needed, EGARA members are there to help.

### EGARA Membership Application

(please print clearly)

Date of Application: \_\_\_\_\_

Name: \_\_\_\_\_ Call Sign: \_\_\_\_\_

Address: \_\_\_\_\_ City: \_\_\_\_\_

Zip: \_\_\_\_\_ Email: \_\_\_\_\_ License Class: \_\_\_\_\_

Home Phone: \_\_\_\_\_ Cell Phone: \_\_\_\_\_

Are You an ARRL Member? Yes: \_\_\_\_\_ No: \_\_\_\_\_

EGARA Membership Type: Individual - \$15/year \_\_\_\_\_ Family - \$25/year \_\_\_\_\_

Join EGARA & ARRL: Individual - \$49 \_\_\_\_\_

Make checks payable to EGARA. Mail to: EGARA, 983 Sterling Ridge Drive, Rensselaer, New York 12144

# Getting You On the Air -- Repeaters

## Repeater Basics:

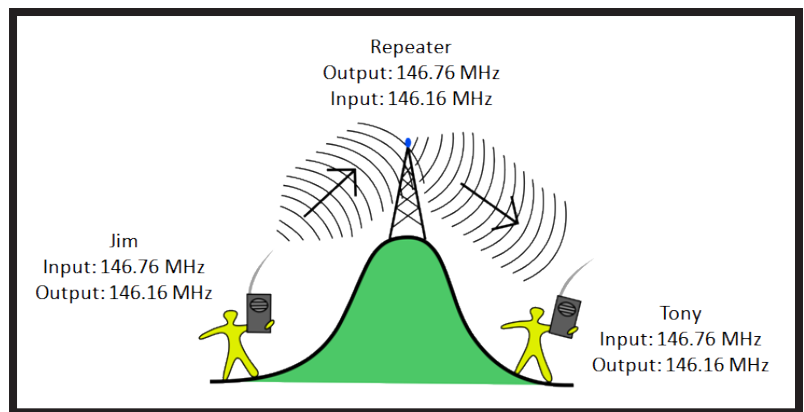
Repeaters extend the range of your VHF or UHF radio by relaying your relatively weak signal to other stations, by using a higher power system that's usually located at a high elevation which maximizes its coverage. EGARA operates several repeaters for the benefit of its members and they are listed below. Repeaters work by receiving on one frequency and then re-transmit at exactly the same time on a second "offset" frequency.

For example, on the 2 meter ham band these frequencies are 600 kHz (or 600 kilohertz) apart. On other bands, the offsets are different. As a general rule, if the output frequency (transmit) of the repeater is below 147 MHz, then the input frequency (listening) is 600 kilohertz lower. This is referred to as a negative offset. If the output is 147 MHz or above, then the input is 600 kilohertz above. This is referred to as a positive offset. For example: The club's VHF repeater is 147.270+ which means you listen on 147.270 and you transmit on 147.870 (adding 0.6 MHz).

*Virtually all ham radios sold today set the offset once you have chosen the operating frequency automatically.*

However, this chart shows the offsets for different bands in case you ever need the information:

Output Frequency	Input Frequency Offset
51-52	- 0.5 MHz
52-54	- 1.0 MHz
144.51-144.89	+ 0.6 MHz
145.11-145.49	- 0.6 MHz
146.0-146.39	+0.6 MHz
146.61-147.0	-0.6 MHz
147.0-147.39	+0.6 MHz
147.6-147.99	-0.6 MHz
223-225	- 1.6 MHz
440-445	+ 5.0 MHz
445-450	- 5.0 MHz
918-922	-12 MHz
927-928	-25 MHz



**PL tones:** PL, an acronym for Private Line, is Motorola's proprietary name for a communications industry signaling scheme called the Continuous Tone Coded Squelch System, or CTCSS. It is used to prevent a repeater from responding to unwanted signals or interference. Tone Squelch is an electronic means of allowing a repeater to respond only to stations that encode or send the proper tone. In other words, if a repeater is set up to operate only when a PL tone of say, 94.8 Hz is heard by its receiver, then it will allow the transmitting station access. If your station, (your mobile, base or hand held) does not transmit the tone that the repeater receiver has been programmed for, when you key up, then the receiver of the repeater does not hear you and will not be usable by your station until you set the proper tone in your radio to be transmitted when you key your mic. If a repeater is "In PL mode" that means it requires a CTCSS tone (PL tone) to activate the repeater.

**EGARA Repeaters** maintains the following repeaters. Remember, they can only be accessed by using the listed PL tones.

Grafton • 147.33, PL 146.2

Albany • 147.27, PL 94.8

Troy • 145.110, PL 94.8

Troy • 224.800, PL 94.8

New Scotland • 444.700, PL 94.8

**These repeaters are free to use and are open to all amateurs to use.**

# How do you make a call on an Amateur Repeater?

That most exciting day just arrived! You now have passed your Technician Class exam and have been issued your first call sign by the FCC.

You have your station all set up and you are ready for your first contact on a repeater! You chose a local repeater frequency and dial it up on your rig. **First, LISTEN AND LISTEN SOME MORE.....** to make sure that the repeater is not already in use.

NOW BRAIN LOCK SETS IN! "What do I do? What do I talk about? Will I remember all those rules, regulations, theory and all that other stuff I had to study?"

The simple answer is..... probably not..... but don't worry!

When you are satisfied that the repeater is not in use, set your transmitter power to the minimum and increase only as needed to make contact with the repeater, begin with the call sign of the station you are trying to contact followed by your callsign. e.g. " (THEIR CALL SIGN) this is (YOUR CALLSIGN). If you don't establish contact with the station you are looking for, wait a minute or two and repeat your call.

If you are just announcing your presence on the repeater it is helpful to others that may be listening if you identify the repeater you are using AND your callsign. e.g. "This is (CALL SIGN) listening on the 84 machine" -- or you could also say "This is (CALL SIGN) listening on 146.84." This allows people that are listening on radios that scan several repeaters to identify which repeater you are using.

So, you just keyed your mic, gave out your call sign and now you hear.....your call sign and someone coming back to you with his call sign..... he or she un-keys and the repeater is waiting for YOU!

First thing.... try to write his call sign down and if he gives his name, that too. Lots of good operators recognize a new ham instantly on the air and they will guide you with patience, understanding, maybe some fun prodding and picking at you to get you to relax and have fun with your new license.

He or she will WELCOME you!

A good operator will never make you feel unwanted on the air. He may ask you to repeat your call sign just to make certain he understood who he is talking to and if you forget to give your name, he will ask for it. Most hams don't like to talk to a "call sign", so getting names and also locations helps to start the conversation.

If you make mistakes.... the other station will most likely let you know what you did wrong and inform you as to the correct way in a friendly manner.

Don't be surprised if your new contact asks you all the questions instead of the other way around. He or she is just trying to get you to feel relaxed on the air. As your experience grows in ham radio, always try to remember your first contact and how excited and nervous you were. Now it's your turn and you are the one responding to a new ham and his first contact! Make him or her feel at home and..... be a good operator..... like your first contact was!

Repeater ID.....you and it!

You must transmit your call sign at the end of a contact and at least every 10 minutes during the course of any communication. You do not have to transmit the call sign of the station to whom you are transmitting. Never transmit without identifying. For example, keying your microphone to turn on the repeater without saying your station call sign is illegal. If you do not want to engage in conversation, but simply want to check if you are able to access a particular repeater, simply say " (your call sign..... testing)."

## **Remember! This is not CB radio!**

Don't use CB lingo on any ham band such as 10-4, what's your 20, etc..... and don't say BREAKER!

Using the words BREAK, or BREAK, BREAK or BREAK, BREAK, BREAK or any combination of them on Ham radio can be misunderstood by an operator depending on his experience. The word "break" or combinations of it carries many different meanings in the ham community and in the English language.

According to THE EMERGENCY COORDINATOR'S MANUAL: The word "break" is never used UNLESS there is an emergency."

If a station needs to report an emergency, STOP TRANSMITTING IMMEDIATELY and allow the other station access to the frequency.

## **Talking to other stations:**

Use plain language on a repeater. If you want to know someone's location, say "Where are you.... or what's your location?" If you want to know whether someone you're talking with is using a mobile rig or a hand-held radio, just ask: "What kind of radio are you using?" You get the idea. Most repeater use is of a "local" nature so signals will be usually of very high quality. The use of the phonetic alphabet is very helpful at times.

Don't call "CQ" to initiate a conversation on a repeater. Just simply listen to make certain the repeater is not in use and then key your mic and say your call sign and "listening". If someone happens to be listening and they want to talk to you they will respond.

---

## **Getting Experience**

One of the best ways of getting experience is by participating in public service events where local radio clubs provide communications support. Such events include 5k road races, Halloween Pumpkin Patrols, and emergency communication drills held by local ARES groups (Amateur Radio Emergency Services). Check with local clubs to learn about their public service activities. These types of events provide real-world hands-on experience that's invaluable.

## **The Future - HF!**

Once you get on the air, chances are you'll want to do more -- including upgrading your license to gain more operating privileges. Passing your General license exam will open up a whole new world to you, including the enjoyment and thrill of long-distance communications on the HF bands with hams hundreds or even thousands of miles away.

The General exam is not difficult -- if you are willing to invest some time studying. There are many study guides available, both in book form and on-line. There are also practice tests on-line so that you can check your knowledge and understand where you need to focus your studies. There are even cell phone apps you can download and install so that you can study wherever and whenever you have a free moment!

As always, remember that Elmers are always ready to help you learn and understand. The concepts behind what makes radio work may seem overwhelming and intimidating, but the basic theory is not hard to understand, especially once you begin your journey on the air! We look forward to hearing you on the air! Welcome!

# What is Ham Radio?

■ A man in Dallas receives a data transmission from an orbiting satellite. He forwards the data to a university in Norway, to help the students with a science project.

■ During a Colorado wildfire, communications assistance from volunteer Amateur Radio operators helps save lives and property.



■ A woman in Connecticut uses a pocket-sized handheld radio when she's out of cell phone range to talk to her friends in North Carolina.

*This unique mix of fun, public service, and experimentation is the distinguishing characteristic of Amateur Radio, also called "ham" radio.*



**ARRL** The national association for AMATEUR RADIO

# US Amateur Radio Bands

## US AMATEUR POWER LIMITS

FCC 97.313 An amateur station must use the minimum transmitter power necessary to carry out the desired communications. (b) No station may transmit with a transmitter power exceeding 1.5 kW PEP.

Effective Date  
March 5, 2012

Published by:

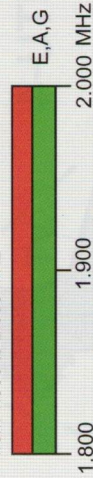
**ARRL** AMATEUR RADIO®  
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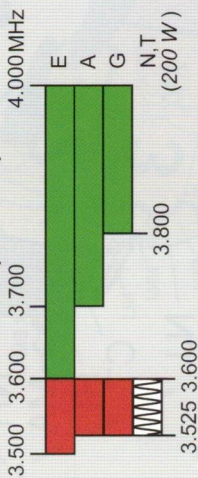


### 160 Meters (1.8 MHz)

Avoid interference to radiolocation operations from 1.900 to 2.000 MHz

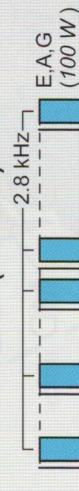


### 80 Meters (3.5 MHz)



### 60 Meters (5.3 MHz)

5330.5 5346.5 5357.0 5371.5 5403.5 kHz  
General, Advanced, and Amateur Extra licensees may operate on these five channels on a secondary basis with a maximum effective radiated output of 100 W PEP. Permitted operating modes include upper sideband voice (USB), CW, RTTY, PSK31 and other digital modes such as PACTOR III as defined by the FCC Report and Order of November 18, 2011. USB is limited to 2.8 kHz centered on 5332, 5348, 5358.5, 5373 and 5405 kHz. CW and digital emissions must be centered 1.5 kHz above the channel frequencies indicated above. Only one signal at a time is permitted on any channel.



### 40 Meters (7 MHz)



Phone and Image modes are permitted between 7.075 and 7.100 MHz for FCC licensed stations in ITU Regions 1 and 3 and by FCC licensed stations in ITU Region 2 West of 130 degrees West longitude or South of 20 degrees North latitude. See Sections 97.305(c) and 97.307(f)(11).  
Novice and Technician licensees outside ITU Region 2 may use CW only between 7.025 and 7.075 MHz and between 7.100 and 7.125 MHz. 7.200 to 7.300 MHz is not available outside ITU Region 2. See Section 97.301(e). These exemptions do not apply to stations in the continental US.

### 30 Meters (10.1 MHz)

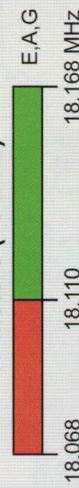
Avoid interference to fixed services outside the US.



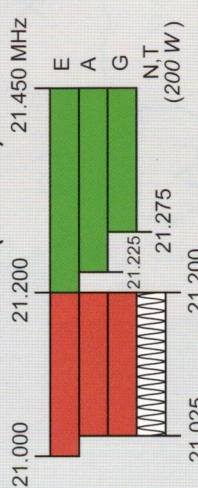
### 20 Meters (14 MHz)



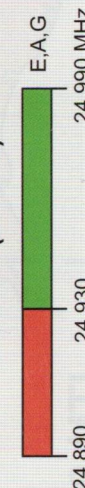
### 17 Meters (18 MHz)



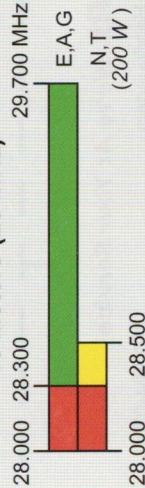
### 15 Meters (21 MHz)



### 12 Meters (24 MHz)



### 10 Meters (28 MHz)



### 6 Meters (50 MHz)



### 2 Meters (144 MHz)



### 1.25 Meters (222 MHz)



\*Geographical and power restrictions may apply to all bands above 420 MHz. See *The ARRL Operating Manual* for information about your area.

### 70 cm (420 MHz)



### 33 cm (902 MHz)



### 23 cm (1240 MHz)



All licensees except Novices are authorized all modes on the following frequencies:  
2300-2310 MHz 10.0-10.5 GHz \*  
2390-2450 MHz 24.0-24.25 GHz  
3300-3500 MHz 47.0-47.2 GHz  
5650-5925 MHz 76.0-81.0 GHz  
All above 275 GHz

\* No pulse emissions

## KEY

**Note:** CW operation is permitted throughout all amateur bands.

MCW is authorized above 50.1 MHz, except for 144.0-144.1 and 219-220 MHz.  
Test transmissions are authorized above 51 MHz, except for 219-220 MHz

- █ = RTTY and data
- █ = phone and image
- █ = CW only
- █ = SSB phone
- █ = USB phone, CW, RTTY, and data
- █ = Fixed digital message forwarding systems only

- E = Amateur Extra
- A = Advanced
- G = General
- T = Technician
- N = Novice

See [ARRLWeb](http://www.arrl.org) at [www.arrl.org](http://www.arrl.org) for detailed band plans.

**ARRL**  
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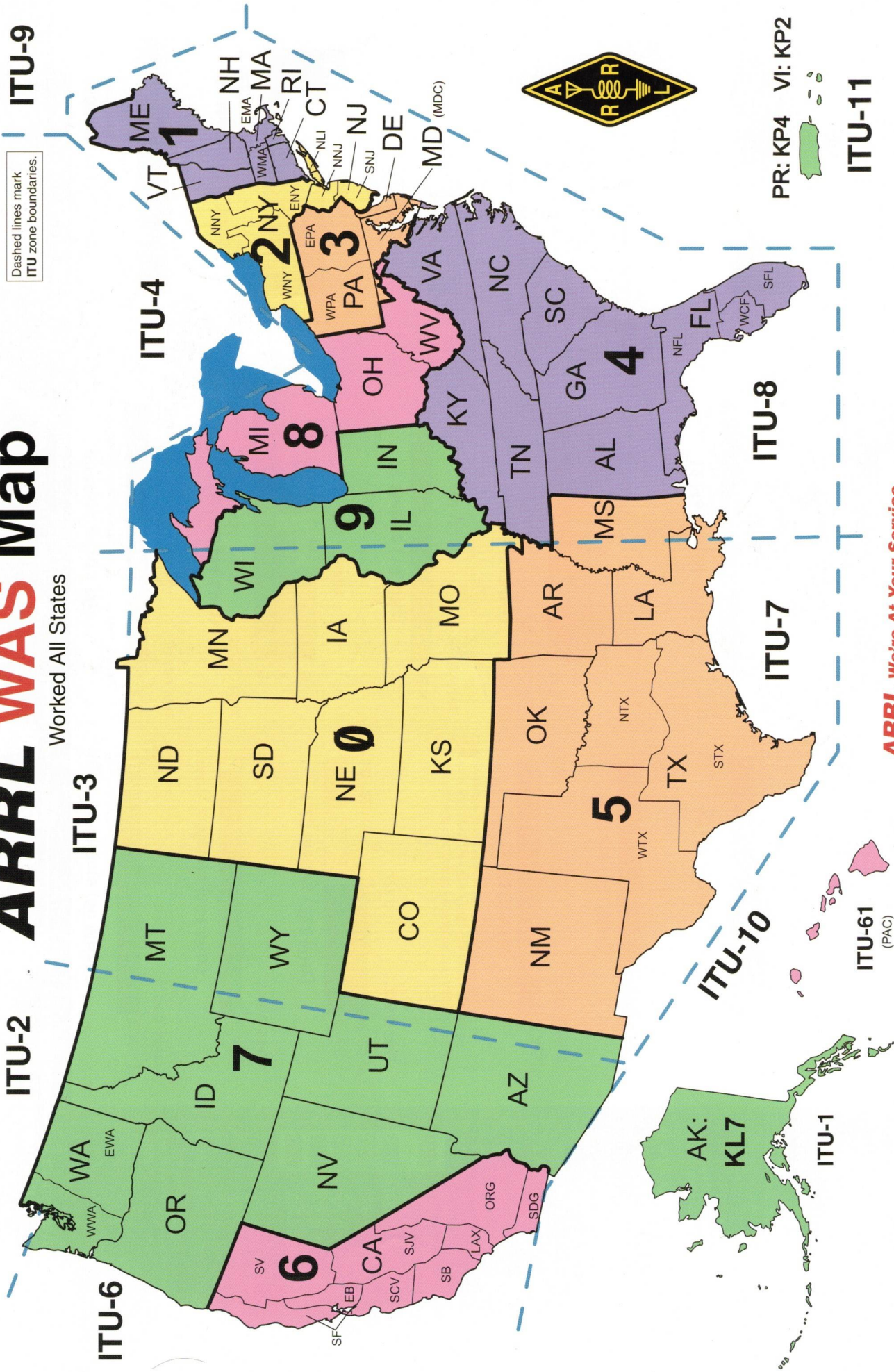
Exams: 860-594-0300 email: [vec@arrl.org](mailto:vec@arrl.org)  
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# ARRL WAS Map

Worked All States

Dashed lines mark ITU zone boundaries.



ITU-9

ITU-4

ITU-3

ITU-2

ITU-6

ITU-7

ITU-8

ITU-7

ITU-10

PR: KP4 VI: KP2

ITU-11

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HI and Pacific: KH6

ITU-61 (PAC)

# ARRL The national association for AMATEUR RADIO®

# Amateur Radio...

## *Serving Your Community*

Events such as marathons and bike-a-thons; fund-raisers such as walk-a-thons; celebrations such as parades; and exhibits at fairs, malls and museums — these are all large, preplanned, non-emergency activities.

Amateur Radio people (also called “hams”) are well known for our communications support in disaster and post-disaster situations. But did you know we also provide communication services to the public during special events?

### **How Amateur Radio Works With Event Sponsors and Public Safety Officials**

We're called “amateurs” because we are not paid. Our services are provided at no charge. Like amateur sports, we do it for the love of it! We may be called “amateurs,” but our communications services are professional.

Amateurs and their equipment can interface with both public safety efforts and event organizers.

Our equipment can be made operational quickly inside a building, in a mobile command post or out in field units.

Hams are trained, organized volunteers willing to meet the communications needs of the event sponsor.

Police and fire radios are for tactical or operational traffic in emergencies. Amateur Radio offers administrative radio communications options for use in your overall management and coordination of the event.

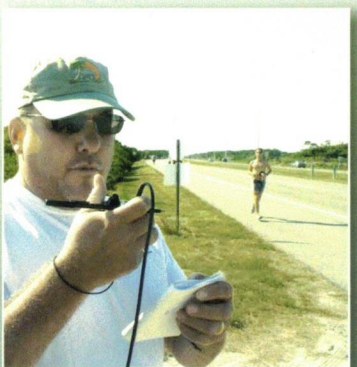
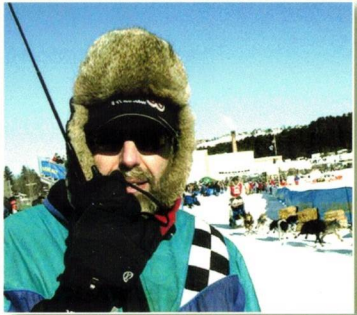
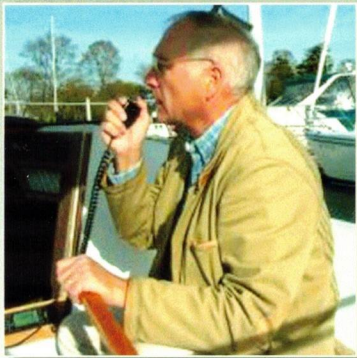
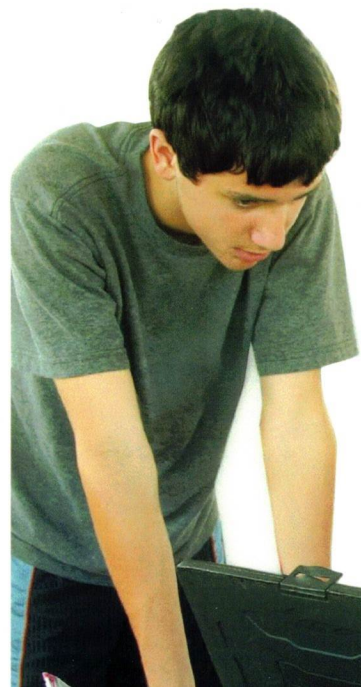
Hams have a readiness to receive specific training for your individual event.

You have instant communications from the starting line to the finish line, the official's area, net control, water stations, aid stations, medical facilities, sag wagons, floats, grandstands, parking areas, review stands and medical command facilities.

Once the necessary introductions have been made, the rest is easy because Amateur Radio people are indeed the experts in meeting communications requirements of every sort. This is what we love to do!

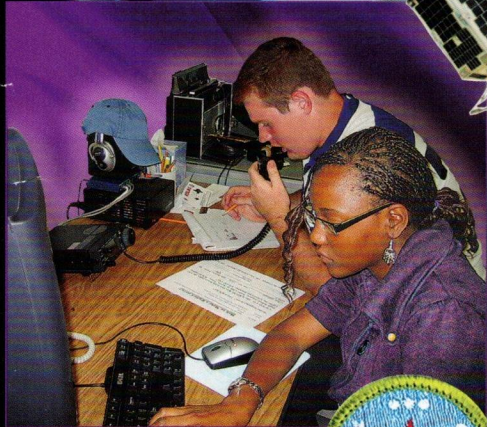
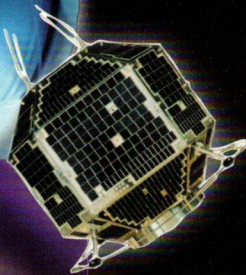
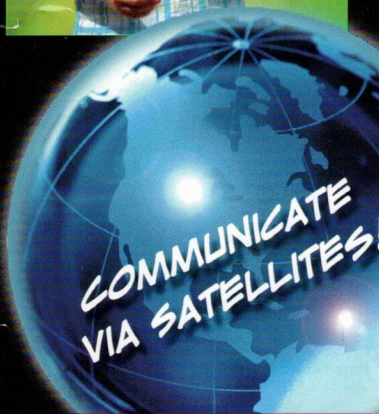
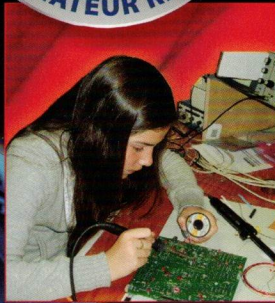
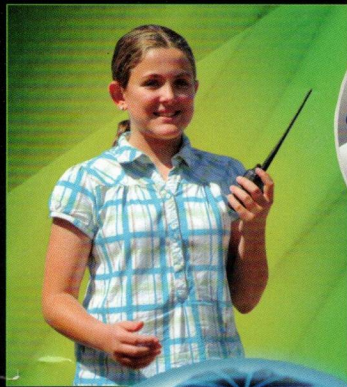
Our radio messages can go to just one location at your event, or event-wide, instantly. Hams can even track the locations of multiple mobile units in real time and display them on a map.

**It's symbiotic.  
You need us,  
and we want  
to help.**



# 22 THINGS YOU CAN DO WITH AMATEUR RADIO:

TECHNOLOGY THAT'S AS COOL AS YOU WANT TO MAKE IT



## EXPAND YOUR WORLD

1. Talk around the world without the Internet or cell phones. Use your own "Internet" when the "other one" is down.
2. Send your voice, text and pictures to unusual places, both near and far.
3. Create your own network of ham radio friends and send instant text messages without cell phones.
4. Meet awesome people from all over the U.S. and around the world, on-the-air and in person at ham radio events.

## EXPLORE AMATEUR RADIO

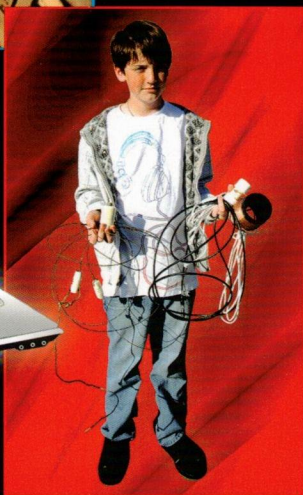
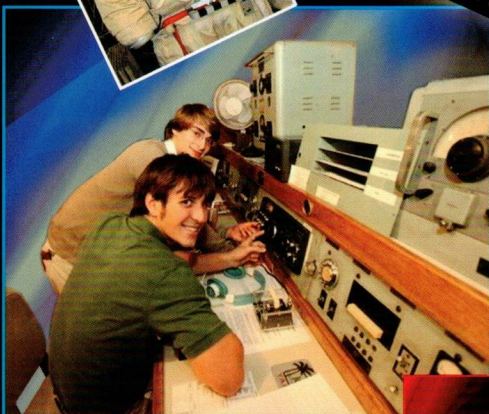
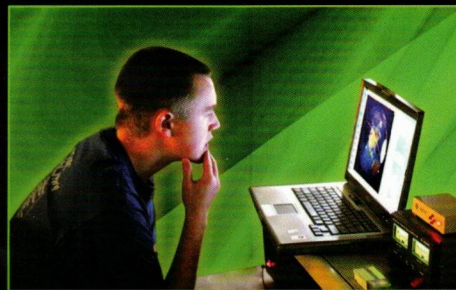
5. Talk through satellites or with astronauts on board the International Space Station.
6. Send messages in code—learn Morse code.
7. Be a signal sleuth, "Fox" hunt for hidden radio signals, and with GPS—GeoFox!
8. Investigate the many new combined radio-Internet communication techniques.
9. Try a new sport—Radiosport: Compete-on-the-air for awards and fun!
10. Send a message around the world using less electricity than a nightlight.

## PUT RADIO TO WORK

11. Become a weather spotter and help your community prepare for weather events.
12. Use Amateur Radio to control models, robots, or even drones.
13. Support recovery efforts in emergencies.
14. Earn badges and patches through Scouting programs and participate in worldwide radio events.



**ARRL** The national association for  
**AMATEUR RADIO®**



(Continued from front)

- 15. Use your radio for community service! Provide communications for a bike race or a marathon.
- 16. Track your friends, pets, or wildlife using your ham radio.
- 17. Take ham radio along when you go hiking or camping. You'll never be out of contact with ham radio!
- 18. Collect weather and flight data by releasing and tracking a high-altitude balloon.
- 19. Learn how radio is used to explore space.

## GO BEYOND THE MENU: CREATE TECHNOLOGY

- 20. Do it yourself, build and test your own gear.
- 21. Experiment with new software applications for radio, or create your own.
- 22. Learn the radio science that powers cell phones, Bluetooth and all of the hottest wireless technologies.

FIND OUT WHAT OTHER YOUNG HAMS ARE UP TO AT: [WWW.ARRL.ORG/YOUTH](http://WWW.ARRL.ORG/YOUTH)

There are over 700,000 Amateur Radio (otherwise known as "ham") operators in the United States and 3 million worldwide. To get your Amateur Radio License you'll need to take a 35-question, multiple choice exam. **Anyone—of any age—can be on-the-air as an Amateur Radio operator!**

## ADVENTURE IS WAITING...



The national association for  
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## Contact Information

I am a brand new member or my membership has been lapsed for 2 or more years. My club will keep \$15 of my dues.

I am renewing (includes lapsed members of less than 2 years). My club will keep \$2.00 of my dues.

Name \_\_\_\_\_ Call Sign \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ ZIP \_\_\_\_\_

Email \_\_\_\_\_ Phone \_\_\_\_\_

Date of Birth \_\_\_\_/\_\_\_\_/\_\_\_\_ **Get an annual birthday coupon (US only)**

My Family Member is Joining or Renewing: (\$10 per member)

Name \_\_\_\_\_ Call Sign \_\_\_\_\_

Name \_\_\_\_\_ Call Sign \_\_\_\_\_

## Your Annual Membership Dues – Circle Your Choice/s.

	1 Year	2 Years	3 Years	
US	\$49	\$95	\$140	Monthly <i>QST</i> via standard mail for US members
Youth	\$25			Must be 21 years old or younger AND the oldest licensed Radio Amateur in the household
Canada	\$62	\$120	\$177	Monthly <i>QST</i> via standard mail for Canadian members
International	\$76	\$147	\$217	Monthly <i>QST</i> via standard mail for International members
International/Canada – no print <i>QST</i>	\$49	\$95	\$140	Digital <i>QST</i> only
Family	\$10	\$20	\$30	Must reside with primary member and have corresponding membership dates; no extra copies of <i>QST</i>
Blind	\$10	\$20	\$30	No <i>QST</i> delivery; all other member benefits apply. Requires a one time signed and dated statement of Legal Blindness

Additional membership options available online at [www.arrl.org/join](http://www.arrl.org/join). US Memberships include \$21 per year for subscription to *QST*. Dues are subject to change without notice and are non-refundable. Only one free book and one monthly issue of *QST* per family. Memberships may not be combined with any other promotion or special offer.

I do not want my name and address made available for non-ARRL related mailings.

## Payment Information

Please charge my ARRL dues less my club's commission. I have paid the commission directly to my club.

\$\_\_\_\_\_ Total Charge to:  Visa  MasterCard  Amex  Discover  Check Enclosed

Card Number \_\_\_\_\_ Expiration Date \_\_\_\_\_

Card Holder's Signature \_\_\_\_\_

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Toll free (US) 1-888-277-5289 or 860-594-0200 ■ [www.arrl.org/join](http://www.arrl.org/join)