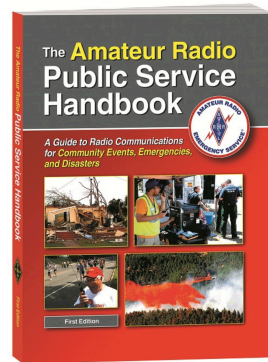# PUBLIC SERVICE
# WITH
# AMATEUR RADIO

Presentation by K1PCS



There are so many things we work with in Amateur radio. So many ways we can use it. Did you know TCP/IP was developed by Vinton Cerf and Bob Kahn in the 1970s, building on concepts from various projects including the ARPANET and packet radio? We use TCP\IP everyday in our computers and our phones. As I was building this slide deck I decided on offering resources, and describing the various groups and organizations that have come to rely on Amateur Radio Operators.

# Amateur Radio Relay League



The First Edition of the ARRL Public Service Handbook came out in 2012, then for some time it was no longer being published. I just noticed that ARRL now offers it as a Kindle book.
https://www.arrl.org/news/em-the-amateur-radio-public-service-handbook-em-now-available-for-kindle
But, I can not find it at Amazon. You can still find used copies for sale out there.

# Amateur Radio Relay League

## Contents

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The ARRL Public Service Handbook is a 300 page text book for teaching many facets to how Amateur Radio has helped restore communications in emergencies. A good resource if you work in Emergency Management, and some tutorial chapters.

# How can Amateur Radio Help?

- The Federal Communications Commission (FCC) defines various types of radio "services" in Title 47 CFR, including Family Radio Service (FRS) and General Mobile Radio Service (GMRS) like the walkie-talkies sold in many stores, the Multi-Use Radio Service (MURS), Citizens Band (CB) radio, and the Amateur Radio Service (ARS).
- In Title 47 CFR 97.3(2), the FCC divides the ARS into three other service area subsets: Amateur Service, Amateur-Satellite Service, and Radio Amateur Civil Emergency Service (RACES). To avoid confusion, we will use ARS to refer to the entire service and Amateur Service to refer to the service area subset.

- These services should not be confused with organizations.

In this club we practice our "Hobby" with the intent that we will know how to use our radios, should we be needed. How else can you get involved?

# How can Amateur Radio Help?



There are more than just these 4 groups that these icons depict. Most clubs embrace the Philanthropy idealism of helping out other organizations doing things like parades, the Green Mountain Endurance Ride. For bicycle races, the Pikes Peak Hill Climb, and at one point we were a major part of the Pikes Peak Ascent and Marathon with radio operators all up and down Pikes Peak.

# Amateur Radio Emergency Services

- There is no official or government organization for the Amateur Radio Service outside of the oversight of the FCC. The ARRL is the largest non-governmental, optional Amateur Service organization in the US. The ARRL is organized into national (headquarters), divisions, and sections. Divisions are generally multiple states and sections are generally states or parts of states.

- Under the auspices of the ARRL, there is a sub-organization called Amateur Radio Emergency Service (ARES). Like the ARRL itself, ARES is divided into the ARRL sections and then each section can be further divided as the Section Manager (SM, an ARRL elected officer) and Section Emergency Coordinator (SEC, an appointed ARRL position) see fit, usually into districts and local ARES groups. In Colorado, the section is divided into nine regions which correspond to the All-Hazards Regions of the state. Each region can be sub-divided into districts as needed.

- Membership in ARES is not restricted to ARRL members (except leadership positions) and to be an ARES member an Amateur Radio operator need only register with their local ARES group.

- Organizations supported by ARES include: National Weather Service (NWS), Red Cross, Salvation Army, FEMA, as well as state, county, and OEMs.

# Amateur Radio Emergency Services

- **When All Else Fails®**

- Amateur radio operators use their training, skills, and equipment to provide communications during emergencies When All Else Fails®.  Hams serve our communities when storms or other disasters damage critical communication infrastructure, including cell towers, and wired and wireless networks. Amateur radio can function completely independently of the internet and phone systems. An amateur radio station can be set up almost anywhere in minutes. Hams can quickly raise a wire antenna in a tree or on a mast, connect it to a radio and power source, and communicate effectively with others.

https://www.arrl.org/ares

**ARES Membership Requirements**
Every licensed amateur, regardless of membership in ARRL or any other local or national organization is eligible to apply for membership in ARES.  Training may be required or desired to participate fully in ARES.
This is where I want to mention that I have belonged to at least three ARES groups that looked to serve various agencies and help protect the citizens of their community.

# Radio Amateur Civil Emergency Services

- Like the Amateur Radio Service itself, there is no actual organizational structure to RACES. In some areas, people have tried to form RACES organizations, but someone would not be required to be part of the local RACES organization to be treated by federal law as a RACES operator. One does not enroll with a RACES organization, they enroll with the appropriate government administration such as an Office of Emergency Management or Community Emergency Response Team (CERT). This is stated in Title 47 CFR 97.407, with the OEM or CERT fulfilling the role of the ,"civil defense organization".

- One of the biggest benefits of being a RACES operator is that in the highly unlikely case of all Amateur Radio operators being ordered off the air by the federal government during a conflict or emergency, RACES operators can continue to send civil defense traffic.

- A disadvantage of operating as a RACES operator is that per Part 97.407 they can only communicate with other RACES operators.

I have met a few people who were all about being RACES and saving the world. The truth is, RACES may never be activated, and you have to already have the background check and be registered with a government entity, like the Pikes Peak Regional Emergency Management. I hope this never gets activated because it will shut down all other Amateur Radio frequencies.

# USRACES.ORG

**Radio Amateur Civil Emergency Service**

RACES stands for "Radio Amateur Civil Emergency Service," a protocol created by the Federal Emergency Management Agency (FEMA) and the Federal Communications Commission (FCC Part 97, Section 407). Many government agencies across the country train their Auxiliary Communications Service (ACS) volunteers using the RACES protocol. The volunteers serve their respective jurisdictions pursuant to guidelines and mandates established by local emergency management officials.

**RACES volunteer operators are:**

- Licensed Radio Amateurs
- Certified by a civil defense agency
- Able to communicate on Amateur Radio frequencies during drills, exercises and emergencies
- Activated by local, county and state jurisdictions and are the only Amateur Radio operators authorized to transmit during declared emergencies when the President of the United States specifically invokes the *War Powers Act*.

**RACES Resource Library:**

- This web site is intended to assist in the distribution of RACES Auxiliary Emergency Communications information. Updated RACES documentation and other emergency preparedness documents are available through the RACES Resource Library, maintained by RACES volunteers registered with the Arlington County, Virginia Office of Emergency Management, Emergency Support Function #2.

**National Incident Management System:**

- Protocols embraced by RACES volunteers across the nation include the *National Incident Management System* (NIMS), which provides a consistent nationwide template to enable federal, state and local governments, nongovernmental organizations, and the private sector to work together to protect against, respond to, recover from, and mitigate the effects of incidents.

NIMS Resource Center      FEMA Independent Study Program (ISP)      FEMA ISP Courses

https://usraces.org

While building this presentation I discovered the USRACES web page. With a closer look this is the local ARES type operators in Arlington, VA. It has some good links to resources.

# SKYWARN STORM SPOTTERS

SKYWARN is a national network of volunteer severe weather spotters. There are currently over 230,000 trained SKYWARN spotters in the U.S. These dedicated citizens come from all walks of life and help keep their local communities safe by conveying severe weather reports to NOAA's National Weather Service (NWS).

They are trained by local NWS meteorologists on how to safely observe severe thunderstorms, tornadoes, hail, flooding, heavy snow, and ice accumulation.

https://www.arrl.org/files/file/Media%20&%20PR/EmergencyRadio_org/Skywarn.pdf

I try to take this training often, as I forget the names of the clouds and other such things. On Friday, June 8th, my co-worker who lives out in Rush texted that they were all okay, but did hide in the center of the house and didn't get to see the funnel clouds. This Skywarn training usually has lots of videos of clouds, funnels and tornados. You can also look up storm chasers on youtube. You don't have to be an Amateur Radio Operator to be a storm chaser, but nasty weather and a long storm can disable cell phone usage. It is always good to have more than one form of communications.

## 2019 Bomb Cyclone March 13th, 2019

**Overview**:

On March 13th, 2019 an extremely powerful low pressure system developed over southern Colorado, setting a record for the lowest pressure ever recorded over Colorado, at Lamar, of 970.4 mb. The system officially met the criteria of a "**Bomb Cyclone**", in which barometric pressure readings dropped in excess of 24 mb (0.71 in Hg) over a 24-hour period.

This storm created widespread blizzard conditions across northeast Colorado, Palmer Divide and over El Paso County. Wind gusts from 60 to 80 mph, with locally up to 100 mph. In addition, 1 to 3 feet of snow fell across the mountains with up to 52" at Wolf Creek Pass.

**Impacts**:

Nearly 1400 airline flights at Denver International Airport (DIA) were cancelled prior to and during the storm. Virtually no planes flow in or out of DIA on Wednesday. 5000 passengers, spent the night at DIA, due to cancelled flights.

All major Highways and Interstates were closed outside of the Denver area, including I-76 northeast to the Nebraska border, I-70 to the Kansas line, and I-25 south to Colorado Springs. In addition I-25 was closed from Wellington to the Wyoming line.

Multiple multi-car accidents occurred, and numerous travelers were stranded in cars and at rest stops over northeast Colorado and the Palmer Divide. 1,500 people were stranded over northern El Paso county alone. Rescue operations for accidents and stranded motorists were severely curtailed by hazardous weather and road conditions throughout the storm. The Colorado National Guard was activated to aid search and rescue operations which numbered over 100.

Numerous trees and power poles were blown down in rural and urban areas. At one point 445,000 customers were without power...some well into Thursday and pockets into Friday.

Numerous schools and businesses were closed on Wednesday. Many schools remained closed on Thursday as well.

1 known fatality occurred as a Colorado State Trooper was killed along I-76 northeast of Denver.

https://www.weather.gov/bou/BombCycloneMarch13th2019

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 Go visit the URL posted here and google the Bomb Cyclone. The Office of Emergency Management had both CERT and the SCU doing work. I sat on a phone call center and answered calls the next two days helping people find their abandoned cars.


**Ham radio remains an essential asset Pike Peak Region Office of Emergency Management**
https://www.koaa.com/news/covering-colorado/ham-radio-remains-an-essential-asset-pike-peak-region-office-of-emergency-management#google_vignette

**Colorado ARES Volunteers Muster for "Bomb Cyclone" Winter Storm**
https://www.arrl.org/news/colorado-ares-volunteers-muster-for-bomb-cyclone-winter-storm

**How local amateur radio enthusiasts in Colorado assist with public safety**
https://coloradocommunitymedia.com/2024/07/25/how-local-amateur-radio-enthusiasts-in-colorado-assist-with-public-safety/

# Colorado AuxComm

- In 2016 the Colorado General Assembly passed HB16-1040 creating the Auxiliary Emergency Communications Unit of the Office of Emergency Management in the Division of Homeland Security and Emergency Management in the Department of Public Safety. "Colorado AuxComm" is an all volunteer organization of licensed amateur radio operators who support state and local government agencies with communication support during disaster preparedness exercises, planned incidents, and natural and man-made disasters.

- Auxiliary Communicators must pass a criminal background check and complete a variety of training courses to be credentialed. The Office of Emergency Management has signed a Memorandum of Understanding with the Amateur Radio Emergency Service Colorado Section (Colorado ARES) under which Colorado ARES section and region leadership in Colorado will serve in parallel roles within the AuxComm Unit. Membership in ARES is not a prerequisite to participation in the unit.

- The federal Department of Homeland Security sponsored Auxiliary Emergency Communications course is being offered in Colorado several times each year. Candidates who complete the AuxComm course; FEMA ICS courses 100, 200, 700, and 800; and pass a background check may be issued a credential identifying them as a member of the AuxComm unit which is recognized statewide. Further information on becoming a member of the Colorado Auxiliary Emergency Communications Unit is available at https://www.colorado.gov/pacific/dhsem/auxillary-communications

- The AuxComm unit by law is the official RACES (Radio Amateur Civil Emergency Service) organization for the state. In addition to traditional amateur radio emergency communications, the unit operates radios on public safety (Part 90) frequencies. The unit has its own talkgroup (2825) on the Colorado Digital Trunk Radio System (DTRS).

## https://dhsem.colorado.gov/AuxComm

When I heard Robert Wareham, NØESQ give his speech about AuxComm, I was getting an idea it was his idea and just for Colorado. When I took the AuxComm class, I was being taught by Dept of Homeland Security and Fema personnel who spoke about all the things and ways it was being used around the Nation. It was a really interesting class.

https://wiki.radioreference.com/index.php/Colorado_AuxComm, https://coloradoares.org/category/auxcomm/,

# Colorado Auxillary Emergency Communications Unit

On June 3, 2020, the Colorado Auxiliary Emergency Communication Unit Administration Plan was signed by DHSEM. The purpose of the Auxiliary Emergency Communication Unit Administration Plan sets forth state expectations, procedures and guidelines for the administration, guidance, operation and support of the Auxiliary Emergency Communication Unit (AuxComm Unit). The plan identifies the roles and responsibilities of the AuxComm Unit to provide amateur communication support to various levels of government and other served agencies during periods of local, regional, state or national emergencies. Adoption of the plan established guidelines to staff and train the AuxComm Unit under the Authority of the Colorado Revised Statutes (C.R.S. 24-33.5-705.5)

In 2016, Colorado House Bill 16-1040 established the auxiliary emergency communications unit referred to as Colorado Auxiliary Communications (AuxComm) within DHSEM's Office of Emergency Management.

https://dhsem.colorado.gov/AuxComm

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AuxComm is now part of the Department of Homeland Security.

https://wiki.radioreference.com/index.php/Colorado_AuxComm, https://coloradoares.org/category/auxcomm/, https://dhsem.colorado.gov/AuxComm

•Applicants to Colorado AuxComm must have a willingness to serve and be at least 18 years of age.
•Prior to application, the individual must have completed
   •  FEMA's online Incident Command System courses IS 100.c, IS 200.c, IS 700.b, IS 800.d
   •  COTrain Colorado Interoperability, Module 1, Module 2, Module 3 (Currently Suspended)
   •  OPSEC Awareness for Military Members, DoD Employees and Contractors
•Prior to application members must have an Amateur Radio Operator license.

https://www.fox21news.com/top-stories/amature-radio-volunteers-stand-by-in-case-of-emergency/.  John Bloodgood Regional Director

PIKES PEAK REGIONAL
EMERGENCY MANAGEMENT

The PPROEM offers Community Emergency Response Team (CERT)
https://pproem.com/community-emergency-response-team-cert

Special Communications Unit (SCU) - KØESD / KØEPC
https://pproem.com/el-paso-county-amateur-radio-emergency-communications

https://pproem.com

I am a member of both of these groups. There are monthly meetings, regular training events, training from our served agencies, like the Red Cross, and interesting people to learn more skills from and mostly hear some interesting stories about how they found they had to apply these trained skills in a situation.

https://pproem.com/emergency-preparedness-safety-guide

**Ham radio remains an essential asset Pike Peak Region Office of Emergency Management**
https://www.koaa.com/news/covering-colorado/ham-radio-remains-an-essential-asset-pike-peak-region-office-of-emergency-management#google_vignette

**How local amateur radio enthusiasts in Colorado assist with public safety**
https://coloradocommunitymedia.com/2024/07/25/how-local-amateur-radio-enthusiasts-in-colorado-assist-with-public-safety/

# Colorado Volunteer Mobilizer

- **Welcome to the Colorado Volunteer Mobilizer (CVM) for Medical and Non-Medical Volunteers**
- This site is used to register, notify, and inform individuals who are interested in volunteering in the event of an accidental or intentional emergency, or other public or health care disaster.

https://covolunteers.state.co.us

## CO *TRAIN*

Colorado TRAIN is a gateway into the TRAIN Learning Network, the most comprehensive catalog of public health training opportunities for professionals who serve the citizens of Colorado.

https://www.train.org/colorado/welcome

When you volunteer with the PPROEM, you will be asked to join the Colorado Volunteer Mobilizer, they provide the background check on you. Once you are cleared as not being a nefarious person, they then give you an account to log into CO TRAIN where you can find a lot of different courses. In this learning web site I got to learn all about 800 Trunk system radios and how they want to phone home all the time. So when firefighters come from another county or state you need to ask them to turn their radios to simplex and let the team lead have one of radios from the local cache of radios being handed out. So much of this presentation is about who, but the how and why are what you get to learn when you volunteer and do trainings.

So much training out there...

FEMA (Federal Emergency Management Agency) and NIMS (National Incident Management System) are related but distinct entities.

FEMA is the agency responsible for coordinating federal disaster response, while NIMS is a standardized approach to incident management that FEMA manages and promotes.

https://training.fema.gov/nims/

https://www.fema.gov/emergency-managers/nims

https://www.fema.gov/sites/default/files/2020-07/fema_nims_doctrine-2017.pdf

Most all of these organizations I have shown you will ask you to take the Incident Command System training courses. Most are online and can be done at your own pace. When you pass the course you get a certificate to share with your served agency. Be sure to ask which version they want. I got to do the ICS 100, 200, 700 and 800 over again because NIMS had updated them.

# What do I do with all this information?

1. Join an Amateur Radio Club. This will be where you learn about all the various modes you can operate in, hopefully find an "Elmer" who can show all of their toys and which mode is their favorite.
2. Figure out if you do want to volunteer.
3. Visit the agency you are interested in and see if what they do is something you like and want to do.

In Colorado Springs there are a lot of Amateur Radio Clubs. There are groups, such as the Cheyenne Mountain Repeater Group and the Colorado Council of Amateur Radio Clubs.

# PPREM's Special Communications Unit



https://www.elpasoco.com/ham-radio-field-day/

I would love to invite you to a monthly meeting, held at the Emergency Communications Center, at 3755 Mark Dabling Blvd on the 3rd Thursday of the month. The meeting starts at 7pm.
To find out more about the Pikes Peak ARES group, visit their web site, then volunteer to help with one of the events they help with.
Even better, check the various club web sites and make a list of where each one is holding their Field Day and go visit. Get to meet people, maybe get fed some good food, get to ask lots of questions.
This year it will be held the last weekend in June, June 28th and 29th.

# Phebe Swope – K1PCS

Thank you for listening, and I hope you can get a copy of this presentation to use for your own reference.

## Questions?

k1pcs@arrl.net

I dug for some photo of me at Field Day, but I am camera shy. I have been a Ham since 1984 and have been a member of the Brazos County ARES, the Alamo ARES, now the PPRARES as well as volunteer with the Office of Emergency Management's CERT team and the SCU. In Texas is was all about Hurricanes, and a few tornados. When I moved to Colorado Springs, I met my first wild fire, the Waldo Canyon Fire. Still not sure I know what a "Bomb Cyclone" is, but I listened to a lot of chatter on the Amateur Frequencies. I enjoy this hobby, and being able to help out. I am looking forward to retirement and being able to learn more about all these modes, I know about, but am not proficient at.