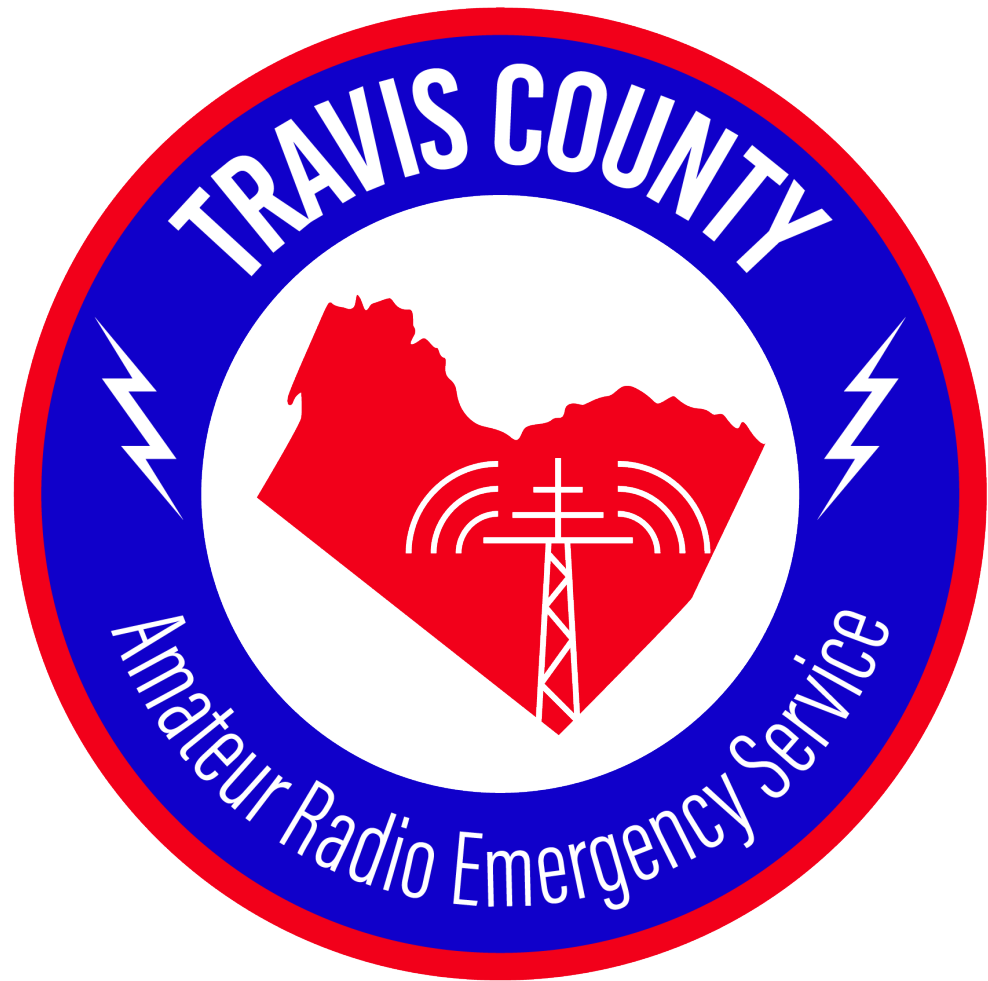
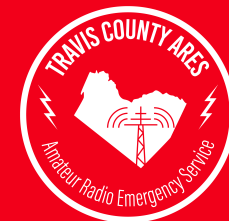


Amateur Radio Communication for Hospital Emergency Service (ARCHES)

Glenn Meter
W5MTR
Emergency Coordinator
Travis County ARES
07/2025

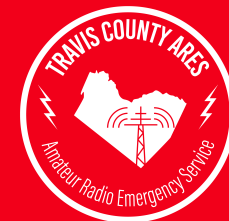


AGENDA



- Who is Amateur Radio Emergency Services (ARES)?
- Why use amateur radios in hospitals?
- What's involved?
- Needs
 - Maintenance
 - More operators

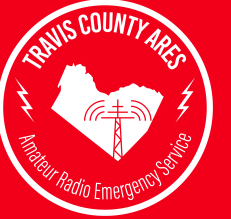
Who



- Amateur Radio Emergency Services (ARES)
 - Serve *non-government agencies*, through amateur radio and other forms of communication
 - Citizen volunteers
 - Work alongside:
 - Radio Amateur Civil Emergency Service (RACES)
 - Government continuity
 - Military Auxiliary Radio System (MARS)
 - Support Department of Defense

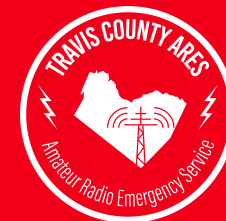
ARES Served Agencies

- Travis County
 - Emergency response communications
- National Weather Service:
 - SKYWARN (weather) nets
- Military:
 - Critical Infrastructure (w/MARS)
- **CATRAC** (Capital Area of Texas Regional Advisory Council):
 - Hospital emergency comms
- Red Cross:
 - Shelter, response communications
- Austin Disaster Relief Network
 - Shelter, response communications
- National Multiple Sclerosis Society:
 - TX MS-150 bike ride comms

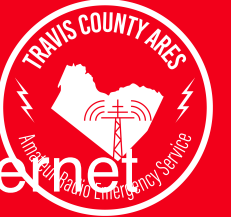


WHAT

- Hospital Emergency Communications
 - Amateur radios work without
 - Internet
 - Phones
 - Comms include
 - Voice
 - Data (e-mail, forms)



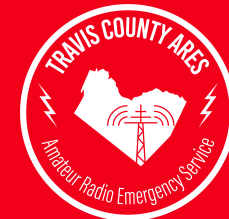
WHY



- Many backup communication systems use the internet
 - P900 radios: radio -> tower -> internet -> tower -> radio
 - StarLink: internet -> ground station -> satellite -> receiver
- Amateur radio:
 - VHF/UHF bands
 - Point-to-point (hospitals are tall)
 - Local repeaters: repeat transmissions over ~30 mi radius
 - HF bands
 - Bounce off ionosphere
 - Regional
 - Long-range

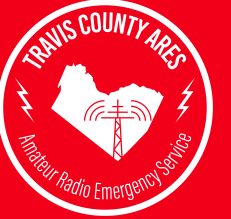
When

- Accidents
 - Backhoes and cables are not friends
- Mother nature
 - Hurricane Harvey: one fiber line away from losing internet to Houston
- Humans
 - Cyberattacks: ARCHES almost activated during CrowdStrike



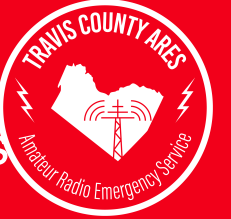
Equipment

- Standard hospital setup:
 - Two radios (VHF/UHF)
 - Voice
 - Data
 - Two antennas on the roof
 - Coax between the radios and antennas
 - Lightning protection tied into building ground
 - Laptop for data communications
- Ideally also have:
 - Emergency Power
 - Guest internet access (OS and software updates, etc.)
- Optional:
 - Third radio/antenna/coax + computer/internet: data gateway
- Go boxes
 - VHF/UHF + HF (long distance) support



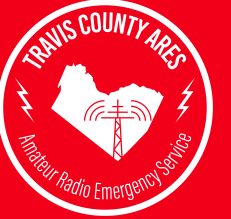
DATA Comms

- Winlink system (winlink.org)
 - International message system:
 - Redundant Amazon Web Server mailboxes
 - Connects to/from regular e-mail
 - Peer-to-peer:
 - Hospital to hospital
- Kinds of data:
 - Regular text
 - Forms:
 - Incident Command System (ICS) forms
 - General Medical Forms
 - Blood Availability
 - Hospital Bed Report
 - Hospital Status
 - State of Texas Assistance Request (STAR) form



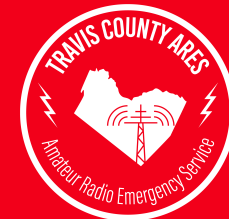
Rules

- FCC Rules for amateur radio:
 - No swearing
 - No selling
 - No music
 - No encryption (everything is public)
 - Encoding is ok (data compression, etc.)
 - Sending data sounds like old dial-up modems
- HIPPA?
 - We are communicators:
 - We pass along messages you dictate to us
 - We're used to using IDs instead of names
 - You follow HIPPA -> we follow HIPPA



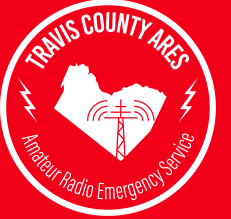
GOALS

- Radios and operators available when needed
 - Staffing:
 - 2-3 operators assigned to each hospital
 - Testing:
 - Monthly tests of voice & data contacts
 - Bi-yearly comms drills

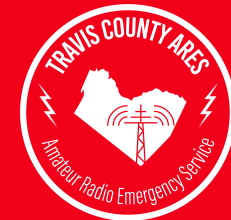


Needs

- Maintenance/facilities
 - Repairs: coax at some hospitals, etc.
 - Emergency power outlets
 - Internet access for remote support
- Operators
 - Train non-medical staff as amateur radio operators
 - Technician license (VHF/UHF privileges)
 - 10 - 30 hours of study
 - General license (HF privileges)
 - 20 - 40 hours of study
 - FCC license: \$35/10 years
 - Test session: \$14



Training



- ARCHES classes:
 - In-person and Zoom (free)
- Online:
 - Hamstudy.org (free)
 - HamRadioPrep.com (Tech \$35; Tech + General \$55)
 - HamRadioLicenseExam.com (Tech \$35)
- Book:
 - Amateur Radio Relay League (ARRL) *Ham Radio License Manual* (Amazon: \$20 paperback; \$10 Kindle)

