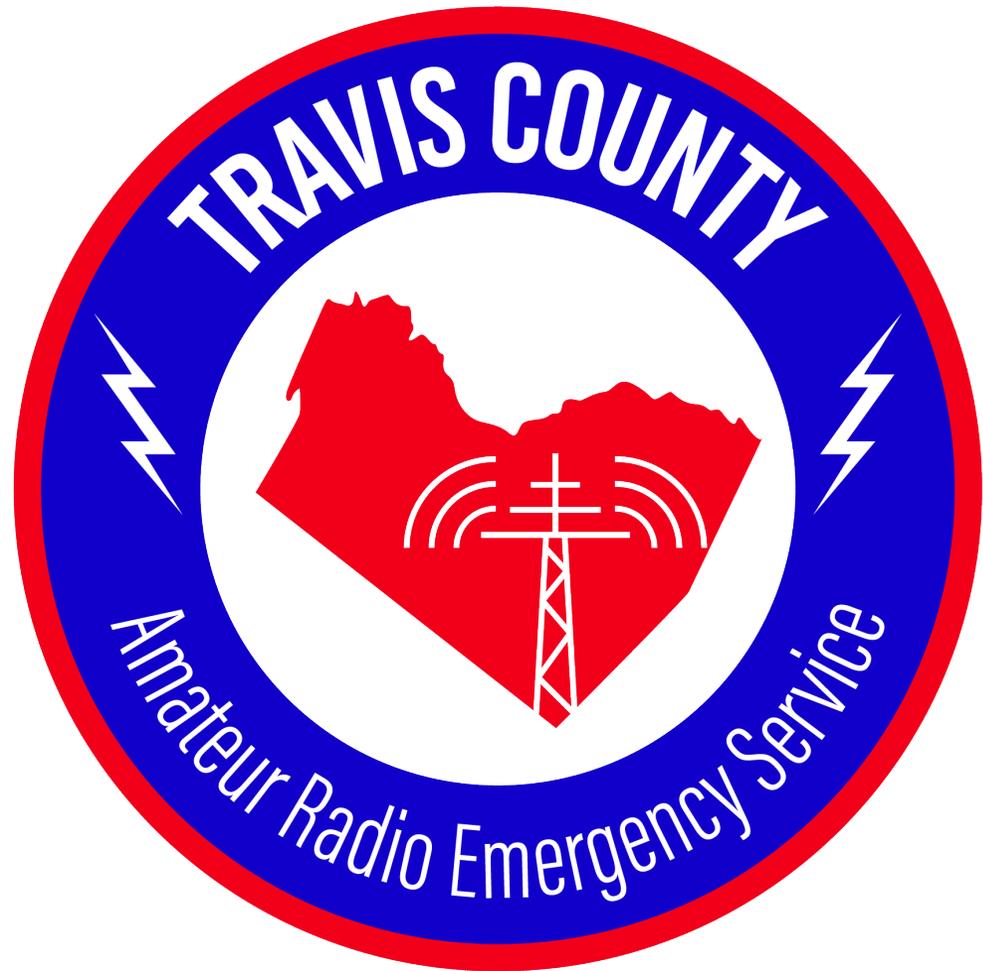
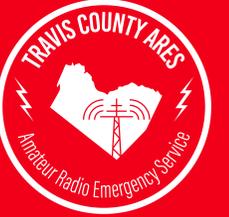


# Amateur Radio Communication for Hospital Emergency Service (ARCHES)

Glenn Meter  
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Travis County ARES  
07/2025

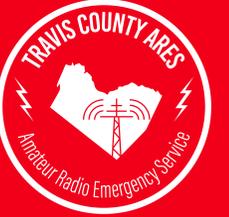


# AGENDA



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

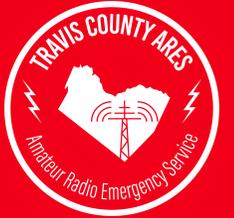
# Who



- 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

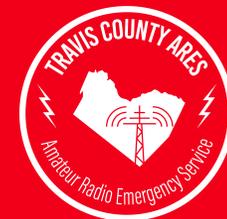
# ARES Served Agencies

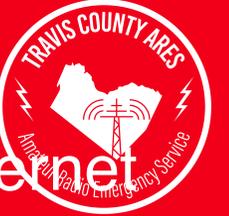
- Travis County
  - Emergency response communications
- National Weather Service:
  - SKYWARN (weather) nets
- Military:
  - Critical Infrastructure (w/MARS)
- **CATRAC** (Capital Area of Texas Regional Advisory Council):
  - Hospital emergency comms
- Red Cross:
  - Shelter, response communications
- 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)



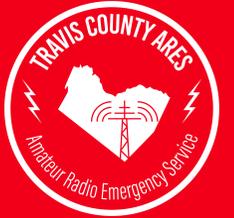


# WHY

- 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

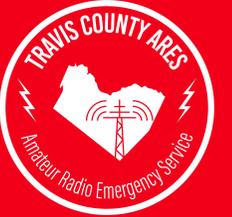
# When

- 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



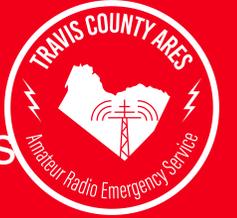
# Equipment

- 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



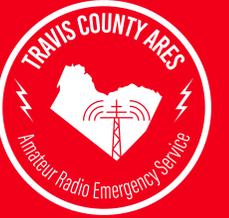
# DATA Comms

- Winlink system ([winlink.org](http://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



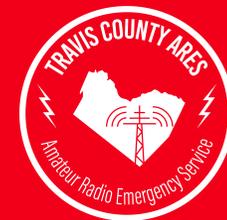
# Rules

- 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



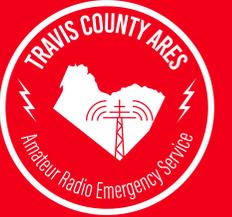
# GOALS

- 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

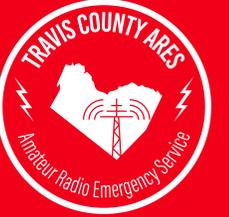


# Needs

- 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)

