

# Off Grid Coms

- Why be capable of communicating off the grid?
  - Voice and data without using any government or private infrastructure
  - Man-made and natural disaster prep
  - Locations away from infrastructure
  - Avoiding internet, cellular network, public wired telephone network
- Definitions
  - Frequency, Wavelength, Hertz (Hz), RF, Power, Watts (W)
  - Frequency Band, FCC band use restrictions, channels
  - Modulation (AM, FM), signal purity, sidebands, SSB
  - line of sight (LOS), over the horizon, bounce
  - repeaters (ground + satellite)
- Types of radio coms
  - FRS - Family Radio Service - no license, short range, inexpensive - entry point
  - GMRS - General Mobile Radio Service - no test, license with fee, short range
  - CB - Citizen's Band - no license, short/medium range
  - MURS - Multi-Use Radio Service - no license, short range, 5 channels
  - Marine Band - water related use only, no license, short-medium range
  - Aviation Band - aircraft and aircraft support only, licensed with aircraft
  - HAM (Amateur Radio) - test and license required, short range to worldwide
    - Widest range of applications and capabilities
    - Not channelized; Bands designated for various purposes + classes
- Frequency Bands
  - HF - High Frequency (3-30 MHz)
  - VHF - Very High Frequency (30 - 300 MHz)
  - UHF - Ultra High Frequency (300 MHz - 3 GHz)
- Ham Radio
  - FCC Licensing - Technician, General, Extra
  - Bands, range, usage by license level
  - Radios
    - HT - "Handy Talkies" - UHF/VHF local and repeater use
    - Mobile - vehicle mounted VHF/UHF
    - HF - long range fixed base stations
  - Repeater usage
  - Antennas
  - Digital voice and data mode (D-Star, DMR, YSF)
  - On-line FCC Amateur Radio classes
    - YouTube Technician by "HamRadio 2.0" 3 classes totaling ~7 hours (Keith took)
      - Course Playlist at <https://unsafespace.com/retreat/offgrid.html>
    - License Testing
  - Ham Clubs
- Radio selection considerations
  - Planned use, Radio type, license and test requirements, brand, quality, budget

