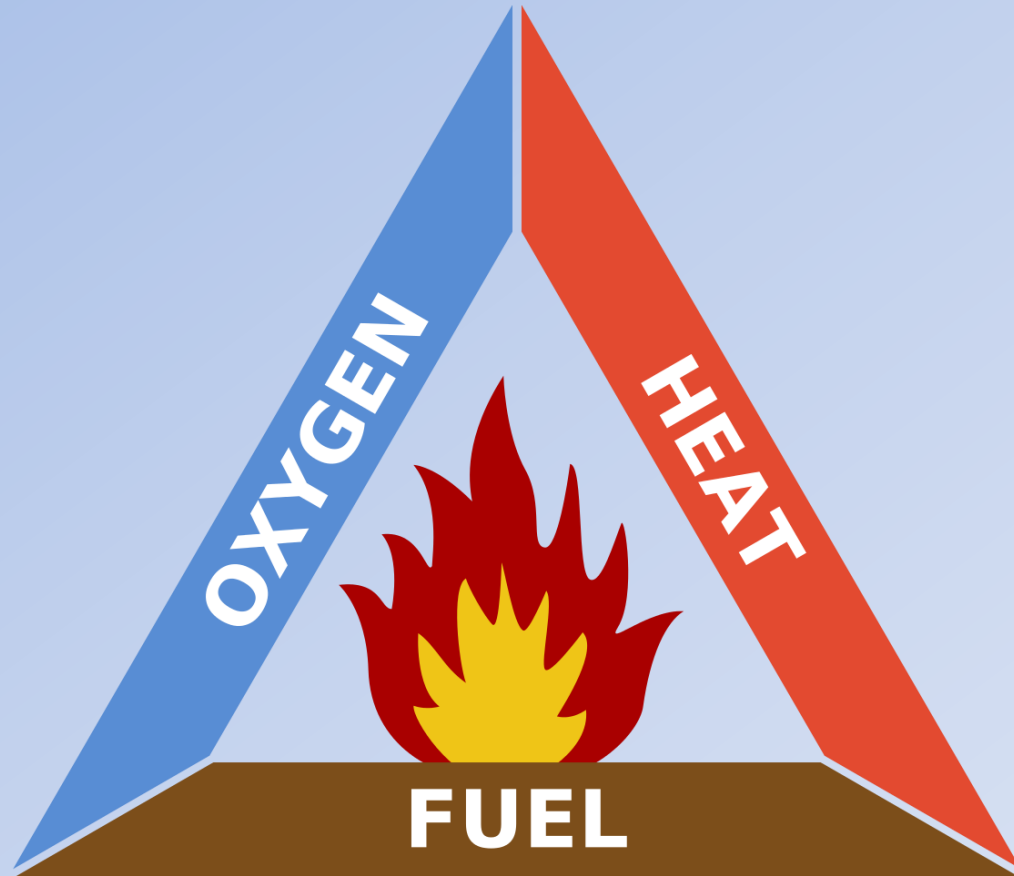


2019 Workshop: Antennas

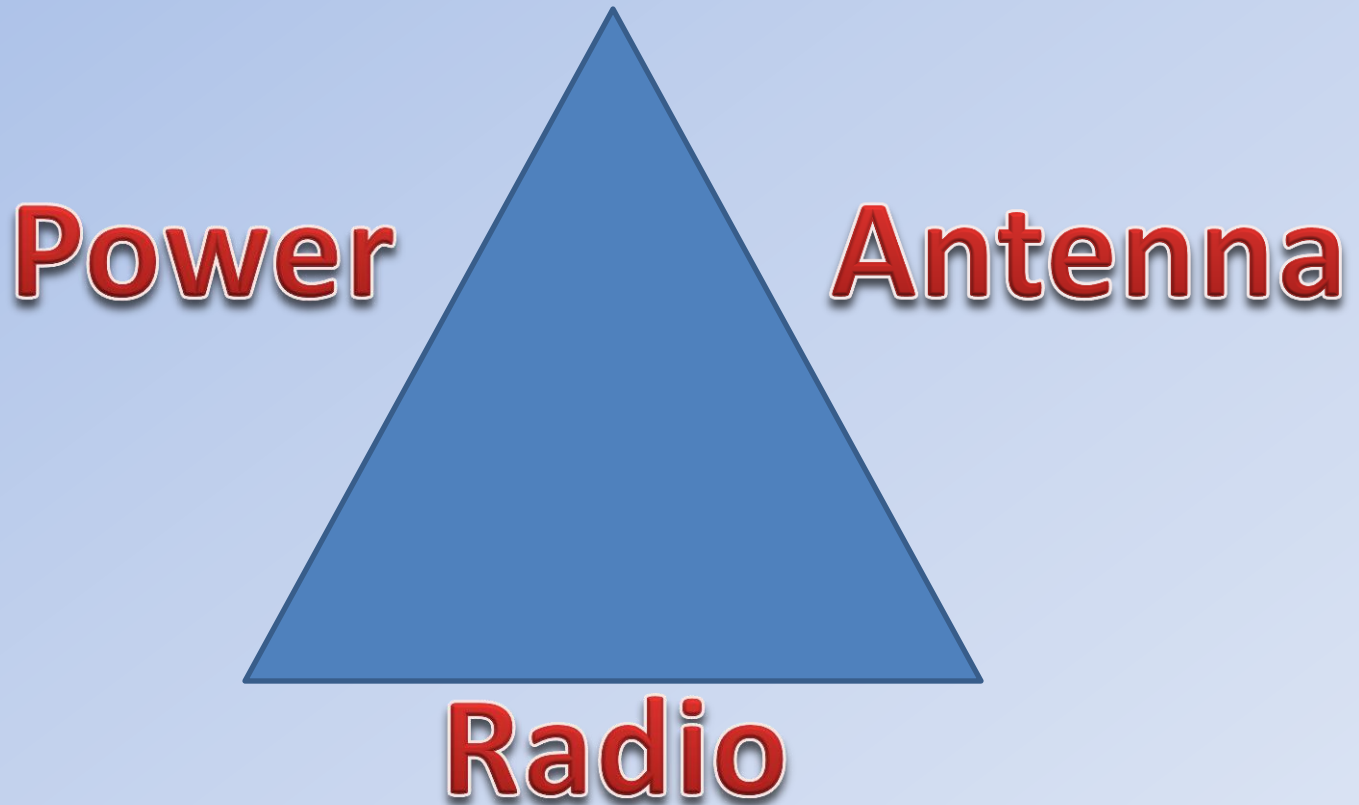
Delvin Buntun, NS7U



Fire Triangle



Radio Triangle



Most
mysterious

Power

Easiest to
improve

Antenna

Radio



Radio Types

Radio Type	Power Req	Power Output	Portable	Antennas
Handheld	Low	Low	Portable	Light
FM mobile	Moderate	Low-High	Mobile or fixed	Light
Portable HF	Low	Low	Portable	Light
Base HF	Moderate-High	Low-High	Mixed	Mixed



Handheld (HH)

Stock handheld rubber duck

- Compromise that works reasonably well in good location
- Easily portable and convenient
- Short range unless in high location
- Great choice for rapidly portable situations
- Lousy choice for marginal location



Handheld (HH)

Roll-up J-Pole

- Greater range, but not portable
- Generally puts antenna higher, works for dual band (2 m and 70 cm)



Handheld (HH)

Magnetic mount mobile

- Usually excellent range from fixed location
 - Needs counterpoise when used in fixed location, such as file cabinet or cookie pan
- Provides increased range for mobile HH use
 - Allows use in someone else's vehicle



FM Mobile

- Usually 2 m and 70 cm dual band radio
- Often installed in vehicle with matching mobile antenna
- Range varies based on radio power, location, and antenna efficiency
- Uses power from the mobile vehicle
- Mobile where vehicle can travel



FM Mobile

- Commercial antennas are probably the best choice
- Suggest dual band even if your radio is single band
- Antennas are usually shorter than vehicle AM/FM radio antenna
- Hard to see from a short distance away



FM Base

- Mobile and Base FM stations are the same radio, but different installation types
- Requires separate power supply, less than HF base but much more than handheld
- Indoor antenna less effective than outside antenna, but less visible to neighbors
- Pay attention to RF exposure



FM Base

Two broad options

- Mobile antenna indoors or unobtrusively outdoors
 - Requires ground plane below antenna
- Base station antenna
 - Many commercial choices with different patterns and gain



FM base

Consider gain and radiation pattern of base station antenna

- Low to moderate gain - likely radiates in donut-shaped pattern around vertical antenna
- High gain – radiation pattern flattened to reach out further
- If repeaters are high and close, high gain antenna may work poorly



Portable HF

- Antennas must be portable
- Mostly low power due to portability
- Almost always need to be outdoors due to size
- Not commonly used during local emergencies except for Health and Welfare several days into incident



Portable HF

Wires

- Balanced dipole
- Off center fed antenna
- End fed antenna



Portable HF

Portable antenna systems

- Buddipole system
- Super antenna system
- Mag-loop antenna



Base HF

Enormous variety of antennas available based primarily on budget, land use rules, spousal approval, neighborhood approval, and other factors



Antenna choices

- Mission (reason to communicate) should govern radio choice
 - Local vs. distant
- Radio choice reduces antenna choices
- Portability need further limits choices



