CORC REPEATER SYSTEMS

REPEATER OPERATIONS & RECOMMENDED PRACTICES

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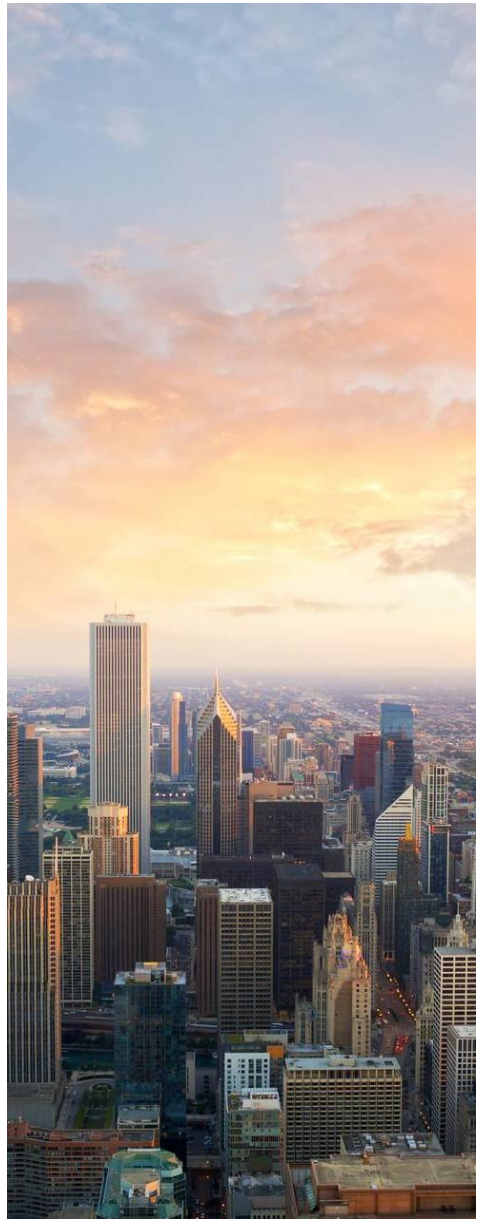
Central Ohio Radio Club



AGENDA

- CORC Repeater Systems Overview
- Repeater Operational Review
- Recommended Operating Practices
- Q&A

CORC REPEATER SYSTEMS OVERVIEW

The Central Ohio Radio Club, Inc.

Home of the Central Ohio Severe Weather Net

More than 50 Years of Service to the Amateur Community

An ARRL Special Service Club

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All receivers on all FM VHF repeaters are now operational and in tone squelch.

CORC Repeater Sites Info

For a map showing all the receiver and transmitter sites click HERE! updated 7-2014.

WA3UOO's Repeater Listing dated 11-21-2020 is HERE!

NOTE: Not every repeater has a receiver at every site listed on the map. Look below for each repeaters information and site listing. Transmit locations are listed with ERP ratings.

CORC Antenna Site Information

Location	Frequency	Feet above ground	Above sea level	ERP
Delaware Co.	146.16 R	500'	1420'	
	146.37 R	500'	1420'	
	147.93 R	500'	1420'	

CORC WEBSITE - https://corc.us

Click on the ***Site Info*** tab to see repeater system locations and view/print a map

CORC REPEATER SYSTEM OVERVIEW

- **W8AIC 146.76 analog FM**
  - - 600 kHz
  - 123.0 CTCSS (PL) encode/decode
  - 8 remote receivers and voter (7 in service)
  - Transmitter location - downtown Columbus
  - CORC supports the Central Ohio Severe Weather Network.

CORC REPEATER SYSTEM OVERVIEW

- **W8RRJ 146.97 analog FM**
  - - 600 kHz
  - 123.0 CTCSS (PL) encode/decode
  - 4 remote receivers and voter (3 in service)
  - Transmitter location – Oakland Park Ave
  - Home of the Central Ohio Traffic Net
    - 7:15 P.M. 7 days a week

CORC REPEATER SYSTEM OVERVIEW

- **W8NBA 147.33 analog FM**
  - + 600 kHz
  - 123.0 CTCSS (PL) encode/decode
  - 4 remote receivers and voter (3 in service)
  - Transmitter location – Jersey
  - General use repeater with IRLP node
  - *Currently off-line pending repair at time of presentation*

CORC REPEATER SYSTEM OVERVIEW

- **W8RRJ - 52.7 analog FM**
  - Inputs on 51.7, 53.7 and 52.94
    - Delaware 51.7
    - Columbus 53.7
    - Jersey 52.94
  - 123.0 CTCSS (PL) encode/decode
  - Multi-site repeater with *3 discrete inputs*
  - Transmitter location – Downtown Columbus
  - General use repeater

CORC REPEATER SYSTEM OVERVIEW

- **W8AIC – 444.200 analog FM**
  - + 5.0 kHz
  - 151.4 CTCSS (PL) encode/decode
  - Single-site repeater
  - Transmitter location – Downtown Columbus
  - Linked to NWS, Wilmington in support of COSWN

CORC REPEATER SYSTEM OVERVIEW

- **W8CMH - D-STAR**
- 145.49 – currently off-line
- 444.0 – on-line
  - Repeater location – downtown Columbus
  - Both are single site repeaters

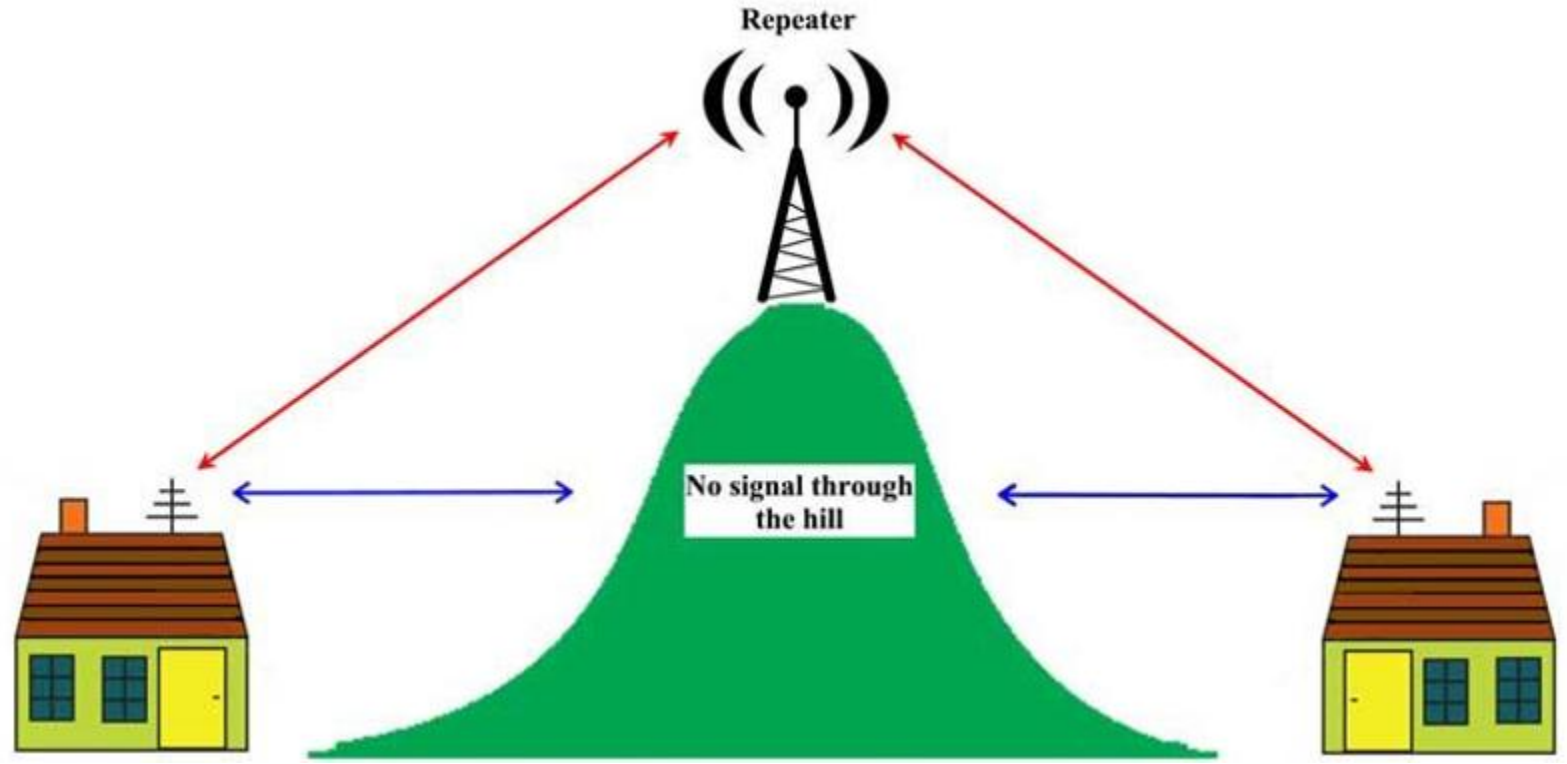
CORC REPEATER SYSTEM OVERVIEW

- **K8NIO – 442.8 analog FM**
  - + 5.0 MHz
  - 151.4 CTCSS (PL) encode/decode
  - Single-site repeater
  - Transmitter location – Downtown Columbus
  - General use repeater

REPEATER OPERATIONAL REVIEW

Practical Use of a Repeater

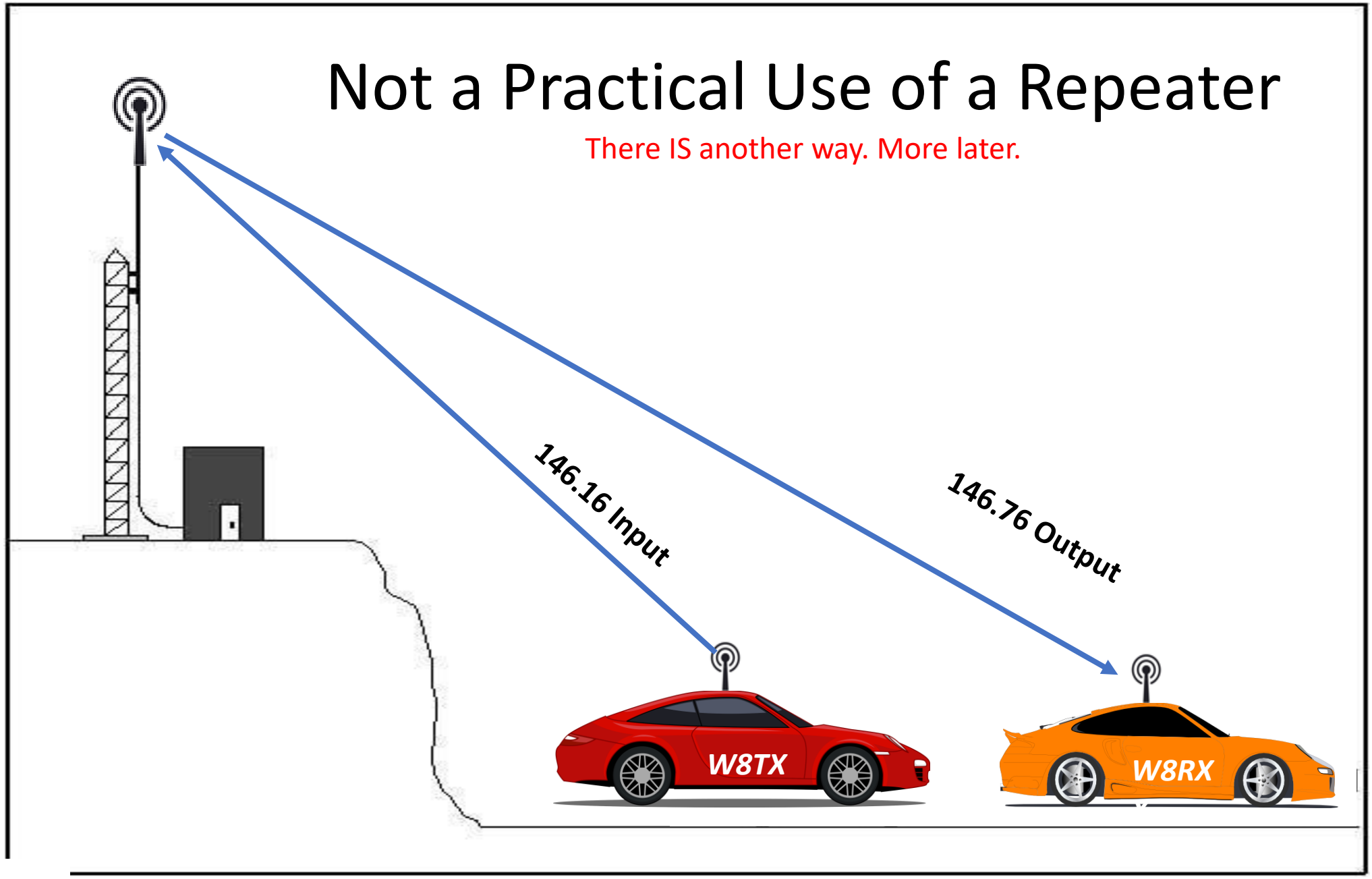
All system equipment is located on the hill



If not for a repeater, one or more stations distant to each other would not be able to reliably communicate.

Not a Practical Use of a Repeater

There IS another way. More later.

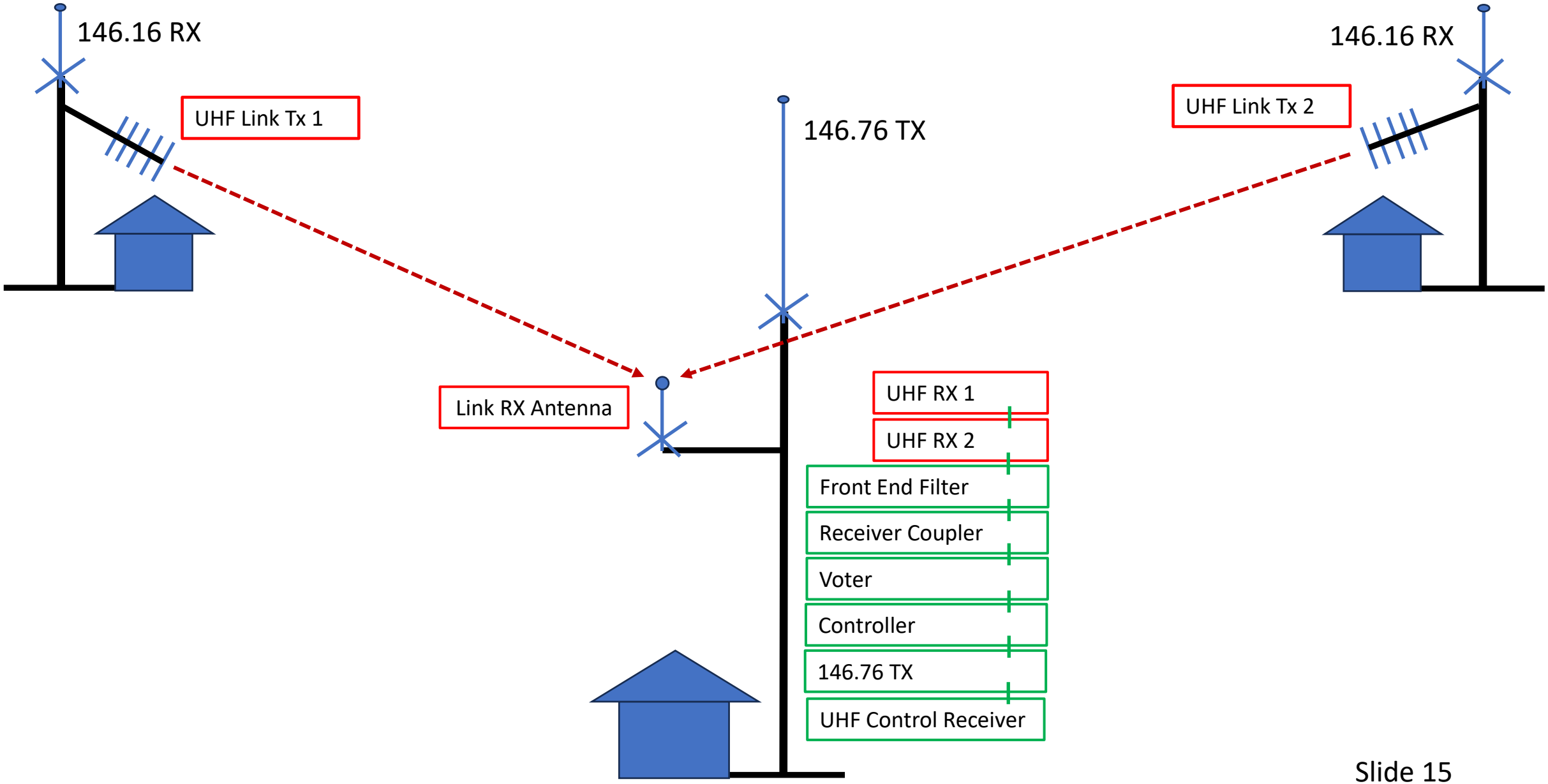


EXTENDING REPEATER RANGE

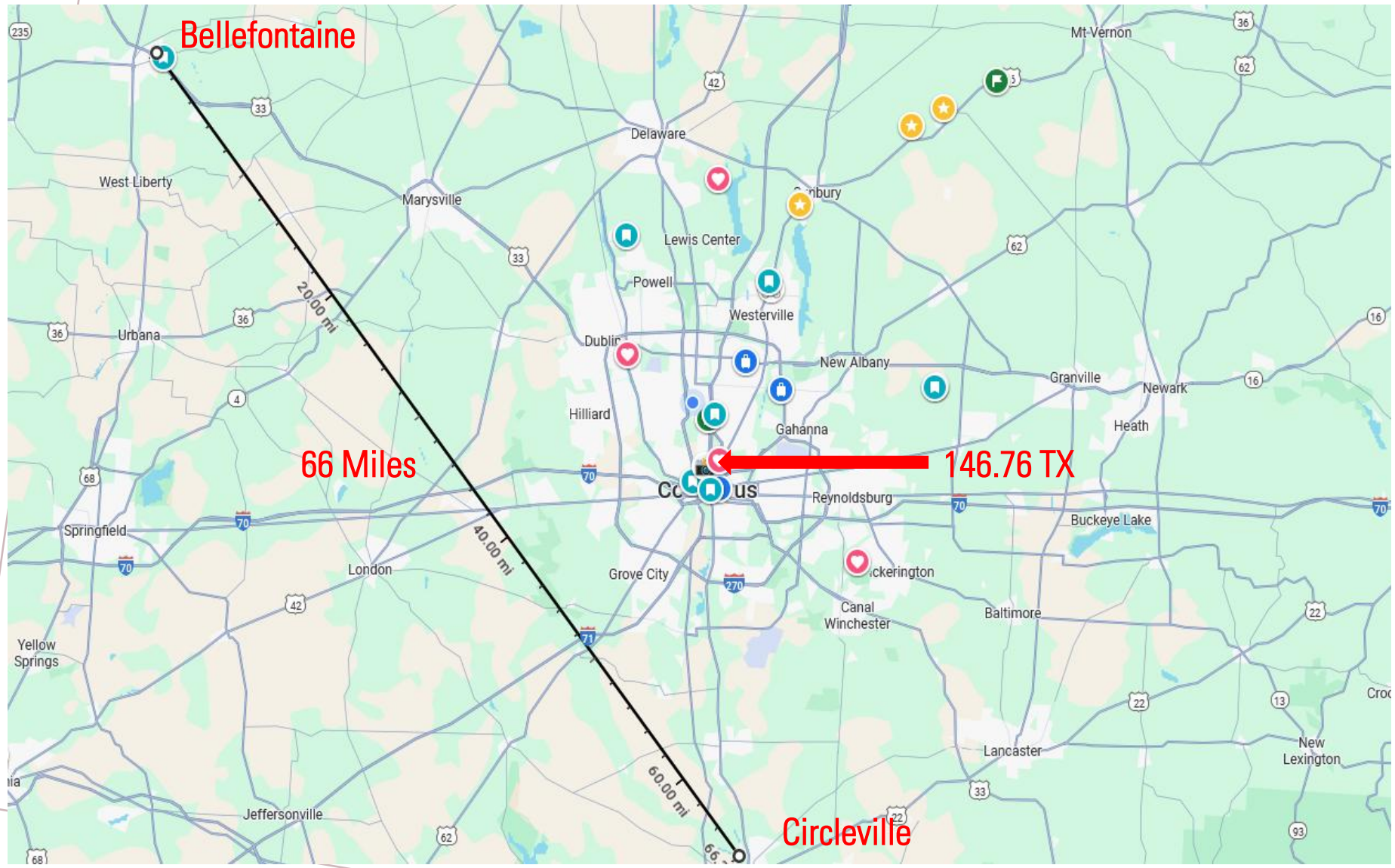
A REPEATER WITH REMOTE RECEIVERS

- Remote Site Components
  - Remote VHF receivers
  - Remote UHF link transmitters
  - UHF Control receiver at VHF transmitter site
  - Receiving and transmitting antennas as/where needed
  - UHF link receivers at VHF transmitter site
  - UHF link receiver
  - Voter
  - System controller (common to single and multi-site repeaters)
  - Receiver coupler
  - Front end filter

Repeater Using Two Remote Receivers



PRACTICAL APPLICATION OF REMOTE RECEIVE SITES



Without remote receivers, communicating between Bellefontaine & Circleville are not possible

RECOMMENDED OPERATING PRACTICES

BEFORE YOU GET ON THE AIR

- Radio Programming Using 16/76 Example
  - Bandwidth setting 5kHz (WBFM)
  - Transmit/receive frequency – 146.16 Tx / 146.76 Rx (-600 kHz)
  - CTCSS (PL) tone set
    - Encode 123.0
    - Decode 123.0
      - When also set to decode the CTCSS tone, your receiver will remain silent when in a high RF environment or during a band opening
      - PL decoders in a lot of Chinese radios FALSE when there is severe broadband RF in the area. Wouxun radios seem to do well. Baofeng do not.
  - RF power setting
  - Receive volume set
  - All CORC repeaters are set to 3 minutes
  - Transmitter time-out time setting. Set to a value less than the repeater timer.
  - *Please, no "roger beeps", Yaesu WIRES data bursts, or other miscellaneous tones. None of these are required to use CORC repeaters.*

LISTEN!

- **Listen First: IMPORTANT!** Listen for 15-30 seconds to make sure a conversation is not in progress. If clear, proceed with your call.
- **Pause Before Speaking**: After keying your microphone, wait a second before talking. This allows the repeater system to activate fully and prevents your first words from being cut off. This is particularly important when operating on repeaters equipped with satellite receivers.
- **Be Aware of Timeout Timers:** CORC repeaters are equipped with a 3-minute timer on the receiver. When you hear the "beep" when you stop transmitting, the timeout timer has reset to zero. The transmitter will shut off a few seconds later.
- Pause a few seconds between transmissions in a conversation to allow others to join in or make a call.

WHO'S THERE?

- **Identify Your Station**: Legally required station identification must be made every 10 minutes and at the end of your conversation. State your call sign clearly.
- You don't need to identify the other station during or at the end of the QSO
- **Don't over-identify:** It's not necessary to state your call sign (and that of the other station) each time you turn it over to the other station.
- **Phonetics Usage**: Use of phonetics each time you identify is not necessary but may be helpful when establishing communications. Such a situation would be warranted when signal "quieting" (a noisy signal) is less than optimum.
- **Clearing the Frequency:** When making a call that no one answers, it is not necessary to say "KX8XYZ clear"

I WONDER IF I'M MAKING THE MACHINE???

- **Avoid "Kerchunking"**: Do not key your microphone without identifying yourself just to see if you are in range. This is poor practice and an FCC violation. A brief "[Your Callsign] testing" is acceptable if you need to perform a test.
- It's important to know that just because you can "hit the machine" does not mean your signal is usable.
- It means your signal was strong enough to break the squelch on the repeater receiver, but that's it.

CALLING A STATION AND ENDING A QSO

- A basic call to a station consists of first stating the call sign of other station, followed by your call sign.
- “WA8KKN this is WA3UOO calling”
  - If I am in my car, I might add “mobile”
- When you are done with the QSO, state your call sign and indicate “clear”. You do not need to identify the other station.

A CALL INTO THE BLIND

- If you want to establish a conversation with any station, simply state your call sign, followed by “listening”
  - “WA3UOO, mobile, Columbus, listening 76”
  - Don’t call CQ
  - Why mention “76”? People may be monitoring multiple frequencies using more than one radio. When you say, “listening 76”, the person knows which radio to go to.
- **Historical context:** The convention against calling CQ on repeaters originated from the perception that FM operation was less "serious" than HF and the need to distinguish repeater use from the HF practice of sweeping the bands for contacts.
- **Potential negative reaction:** Calling "CQ" on a repeater can be seen as poor etiquette by some experienced users and may lead to a negative reaction or being ignored.

CONVERSATION GUIDELINES

- **Keep it Brief**: Repeaters are a shared resource. Keep your conversations to a reasonable length and consider moving a long "ragchew" to a simplex frequency if possible.
- **Joining In**: If you want to join an ongoing conversation, simply transmit your call sign during a pause between transmissions (during the courtesy tone interval). One of the participants should acknowledge you and invite you to join.
- **"Break" is for Emergencies**: Do not use the word "break" to interject into a conversation for a casual comment. The word "break" should be reserved for genuine emergencies or priority traffic only.

CONVERSATION GUIDELINES

- **Acknowledge Others**: If you are in a conversation and another station transmits their call sign, the next station in the rotation should acknowledge them and allow them to speak.
- **Avoid Sensitive Topics**: Refrain from discussing topics like politics, religion, or other controversial subjects that may cause friction among listeners.
- **Maintain Decorum**: Use language suitable for all audiences ("G-rated") and avoid profanity, suggestive phrases, or personal antagonisms. Do not cough, sneeze, or clear your throat while the microphone is keyed.

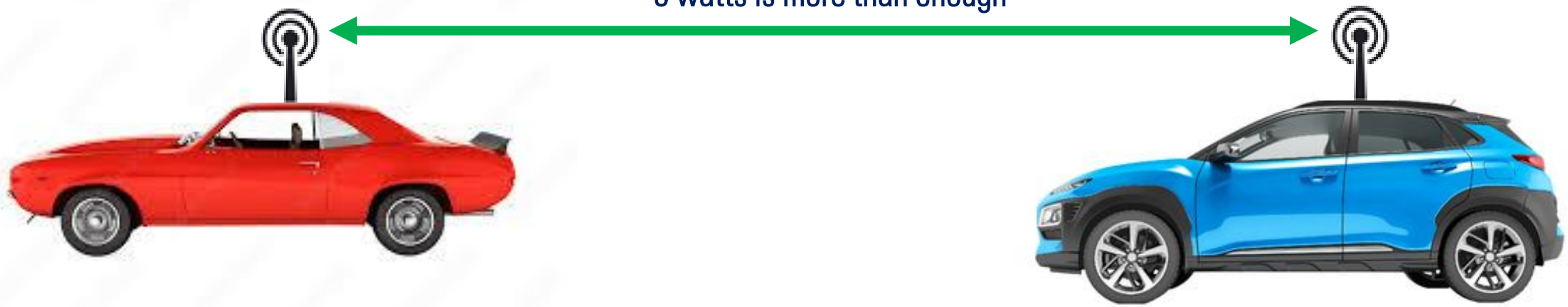
EMERGENCY & PRIORITY USE

- **Yield to Emergencies**: All other communications must yield immediately to emergency or priority traffic.
- **State "Emergency" Clearly**: In an emergency (immediate danger to life or property), use the word "emergency" or "break for emergency traffic" to get the immediate attention of all stations.

SIMPLEX OPERATION

Recommended communication method when all stations are within simplex range of each other

146.43 TX / RX
5 watts is more than enough



SIMPLEX OPERATION

- In amateur radio, a simplex frequency is a single frequency used for direct radio-to-radio communication, without a repeater; both stations transmit and receive on the exact same frequency
- CTCSS (PL) is not used.
- Common simplex frequencies include the following"
  - **146.5**2 – national calling frequency (establish communication, then move to another simplex frequency)
  - 146.55
  - 146.58
  - 146.43
  - 146.46
  - 146.49
  - **446.0** – national calling frequency (establish communication, then move to another simplex frequency)
  - **Refer to the ARRL band plan for more information at** https://www.arrl.org/band-plan
    - Scroll down the page to the band of interest

USEFUL LINKS

- **Repeaterbook** – online repeater directory
  - https://www.repeaterbook.com/
- **ARRL Band Plan** - voluntary division of incompatible modes within a band to avoid interference
  - https://www.arrl.org/band-plan
- **Repeater Builder** - informational help site owned by Kevin Custer W3KKC.
  It is the largest repeater information site in the world.
  - https://www.repeater-builder.com/rbtip/index.html
- **ARRL Antenna Projects** – web-based collection of DIY antennas for HF through UHF
  - https://www.arrl.org/vhf-more-projects
- **Feedlines** – a primer article presented on the ARRL website
  - https://www.arrl.org/feed-lines

Q&A

THANK YOU

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