## Goals, Plans, and Skills

You don't need to be an auto mechanic to drive a car, but you still need a goal, a plan, and driving skills. The goal and plan help you decide on what vehicle you need. For a trip to the store, do you need a car, minivan, pickup, or box truck? It depends if you are a family picking up groceries or a farmer delivering produce. You will need general driving skills and also know how to operate that specific vehicle.

Likewise with radio, you need these same things. if you don't have goals or a plan in mind, then consider that 90% of your communications needs in a disaster or emergency are within five miles. So, first work on local communications (*Line-of-Sight*, *UHF*, *VHF*), that can go 30-60 but typically 2-5 miles.

*Listening (RX) is more important than Talking (TX); Local is more important than Distant (DX).*

1. Get a good portable AM/FM/Weather radio so you can listen to broadcast news and weather. Get extra batteries and an earpiece for it. Learn how to operate it. Also, write down what broadcast radio stations you should listen in an emergency or when bad weather comes.
2. Get one or more kinds of two-way radios so you can communicate locally. Learn how to operate these, then make a simple communications plan on how to use them. Keep the plan simple and flexible for changing needs. *CH3 (321) Plan* – Channel 3, for 2 minutes, at the top of every hour.

After your *Local* needs are taken care of, then consider *Distant* needs. (*Beyond-Line-of-Sight*, *HF*)

3. Get a portable Shortwave radio with SSB (Single Side Band) and learn how to operate it. This lets you listen (RX) to regional and worldwide news. Get needed accessories. Print out the manual. Print out shortwave schedules and mark down which ones you can hear. Also try to listen to Ham Radio stations contacting each other during scheduled and published "Nets".
4. Get Ham HF equipment (and eventually a Ham General class license) so you can communicate regionally (around the state) or nationally and worldwide. Equipment can be expensive (purchased) or less expensive (built) and you will need a moderate amount of knowledge to pass the Ham License test. HF equipment can also listen to Shortwave broadcasts.

## Radios

Radios can be simple with a few options, or complex with lots of capability. When you are deciding, use the "Good, Better, Best" method so you can figure out what is "good enough" or best for your need.

You need to consider several things: *Cost, Commonality, Compatibility, Licensing,* and *Range*. Since you need skills and practice, then use common *license-free* radios, or get licensed and use better radios.

Radio systems for *Local* use: ($ = 1-50 dollars) (Consider the underlined below; Others are special cases)

- **FRS** (Family Radio Systems) ($-$$); Very Common; ***Free to use***; ¼ - 1 mile; Attached antenna
- **GMRS** ($$-$$$); Becoming Common; $ license; GMRS Repeaters; 1-50 miles; Called "CB 2.0"
- **Ham VHF/UHF** ($-$$$$); Common; $ license; Ham Repeaters are everywhere; 1-50+ miles
- **CB** (Citizens Band) ($-$$$); Common; ***Free to use***; 1-8 miles; Getting less popular
- **Business** ($$-$$$$+); Less Common; $$$$+ No-test license covers all members/employees; Can only use your own repeaters; Can use encryption; Range 1-50 miles; Limited frequencies
- **Marine** ($$-$$$); Common; ***Free to use***; Range 1-12 miles on open water; Use on/near water
- **ISM** (900Mhz band) ($$$+); Less Common; ***Free to use***; ¼ - 1 mile; Can use encryption
- **MURS** (Multi-Use Radio System) ($$-$$$); Less Common; ***Free to use***; 1-3 miles; Can send data

Radio systems for regional and worldwide use: ($ = 1-50 dollars)

- **Shortwave Receiver** ($$-$$$$+); Look for SSB capability to also listen to Ham HF
- **Ham HF** ($-$$$$+); $ Individual license needed to transmit; Can also hear Shortwave broadcasts

A few of these *Local* and *Distant* radio systems are starting to use *Digital* modes as well as *Analog*. If you need a radio that can do both modes, then you'll need much more research before purchasing.

## Licensing

You do not need a license to listen to a radio. However, the FCC regulations say you need an FCC license to transmit on *some* radios. For privacy, since this license is public record, then use a PO BOX or CMRA.

***GMRS (General Mobile Radio Service) License*** – *An extended family license*. $35 for a *no-test* 10-year license. This license allows use of GRMS radios on the GMRS frequencies. These radios are compatible with FRS radios, but have more power available (up to 50 watts) and can use better antennas. GMRS repeaters can be used with permission. GMRS is simple to use, growing in popularity, and is "CB 2.0".

***Business License*** – *A group license*. A *no-test* 10-year Land Mobile Radio (*LMR*) license covers all employees in a business or all members in a group. You will need business radios (*Part 90*) and are limited to the frequencies, modes, and repeaters on your license. You can use encryption.

***Ham Radio License*** – *An individual license*. Three levels (*Technician*, *General,* and *Extra*). The $35 license is good for 10-years and the test cost varies ($0-15). The easy *Technician* test for local communications has 35 multiple-choice questions and there is no Morse Code requirement. You must correctly answer 26 or more (74%+). The pool of 411 questions and answers (for 2022-2026) are publicly available so you can study using flashcards. There are live classes, YouTube videos, study apps, and study guides available, many are free or low-cost. Most *Ham Radio Operators* are hobbyist and are not Preppers.

## Tactics, Techniques, and Procedures (plus a few tips)

- *Clarity* – Listen before speaking; Hold the *PTT* for a second, then talk while holding. When finished, hold for a second, then release; Talk across the microphone, not into it; Enunciate
- *Simplicity/Brevity* – Don't monopolize; Not a gossip channel; Plan long messages; KISS
- *Security* – Assume eavesdroppers, so don't tell secrets; Might use *Call Signs*/*Brevity Codes*
- *Communications Plan* – Keep it simple as possible and understandable to your whole family or team. Consider *PACE*, *Call Signs*, *Brevity Codes*, *Authentication/Distress codewords*.
- *Increase your Line-of-Sight Range* – Elevation; Better (*Gain*) Antenna; 4x Power for 2x Distance
- *Handheld radios are more flexible* – Use adapters and cables to put a better antenna, up high.
- *FRS/GMRS Manufactures lie* – Privacy Codes/Subchannels are not Private. Range is nowhere accurate. FRS can only TX on 22 channels, GMRS can TX on those 22, plus 8 repeater channels.

## Resources

Radio Systems Info (FRS/MURS/CB/Marine/etc.) – https://paratusradio.com/radio
Getting your GMRS/Ham/Business License – https://paratusradio.com/license

Radio frequencies around you (Police, Fire, EMS, etc.) – https://www.radioreference.com/apps/db/
GMRS Repeaters - https://mygmrs.com/repeaters Ham Repeaters – https://repeaterbook.com

The Paratus Radio ("Prepared Radio") mission is to help families prepare for their needs in a disaster or even in everyday life. Follow us on MeWe/Instagram or email us (contact@paratusradio.com)

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